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INTERORGANIZATIONAL RELATIONSHIPS AND EFFECTIVENESS IN A PROGRAM FOR THE PREPARATION OF ALLIED HEALTH PROFESSIONALS

by

©

MICHAEL BRUCE BARRINGTON ANDREWS

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

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FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled INTERORGANIZATIONAL RELATIONSHIPS AND EFFECTIVENESS IN A PROGRAM FOR THE PREPARATION OF ALLIED HEALTH PROFESSIONALS submitted by MICHAEL BRUCE BARRINGTON ANDREWS in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Educational Administration.

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ABSTRACT

The major purpose of the study was to explore the possible relationships that might exist between interorganizational linkages, degree of integration and effectiveness of four joint cooperative programs for the preparation of allied health professionals. Further the interrelationships among the linkage dimensions were examined to see if certain of the linkage dimensions were more interrelated than others. A review of related literature and research indicated that the degree of formalization, intensity, and reciprocity of the relationship were important indicators of the ways in which organizations are linked. In order to provide a basis for assessing the impact of linkage dimensions on a joint cooperative program, the degree of integration and overall program effectiveness were considered important variables for this study. Since the study was exploratory in nature, and only four programs were investigated, no research hypotheses were developed at the outset of the study. The specific programs studied were the respiratory technology programs of Algonquin College, Ottawa, Ontario; Fanshawe College, London, Ontario; the Northern Alberta Institute of Technology, Edmonton, Alberta; and the Southern Alberta Institute of Technology, Calgary, Alberta.

Two questionnaires were used to gather perceptual data on the degree of integration and effectiveness of the joint cooperative programs. Forty-one of 48 faculty members returned the integration questionnaire and 62 of 87 senior students completed the program effectiveness questionnaire. Interviews were conducted with key program personnel in

order to gather the necessary information on linkage dimensions. Finally the Canadian Medical Association accreditation reports on the programs studied were obtained along with the students' performance on the 1977 national registration examination of the Canadian Society of Respiratory Technologists.

A generalizing analysis of the research findings related to linkage dimensions, degree of program integration and program effectiveness permitted the development of a number of generalizations worthy of further investigation. The findings on linkage dimensions suggested the following generalizations:

1. *If a joint cooperative program is characterized by a high relative resource commitment and the resource commitment is symmetrical then the cooperative program is likely to be characterized by high formalization and definitional reciprocity.*
2. *If one organization engaged in a joint cooperative program has a high relative resource commitment then the cooperative program is likely to be characterized by high formalization and structural standardization (coordination).*
3. *If a joint cooperative program demonstrates an asymmetrical relative resource commitment then the cooperative program is also likely to demonstrate low definitional reciprocity.*
4. *If a joint cooperative program is characterized by a symmetrical relative resource commitment and the resource exchange is low then the cooperative program is likely to be characterized by low formalization and structural standardization (coordination).*
5. *If a joint cooperative program is characterized by a high degree of agreement formalization then the cooperative program is likely to be characterized by high structural and procedural standardization.*

These generalizations suggest that the key variables determining the pattern of linkage dimensions are the degree of relative resource commitment and symmetry of the resource exchange.

The findings on the degree of program integration were difficult to assess especially in relationship to the linkage dimensions profile. Two possible relationships were suggested in the discussion on integration. One was that the degree of program integration is positively related to the linkage variable "frequency of interaction." A more plausible explanation would be that degree of integration and frequency of interaction tap the same dimension. Some support for that conclusion was found in the work of Schmidt and Kochan (1977).

The final section examined the possible relationship between linkage dimensions and program effectiveness. Two important findings were noted. First, differences were identified between the measures of program effectiveness lending support to the hypothesis that organizations can be effective on one effectiveness indicator but often at the expense of another. Second, there appeared to be some evidence albeit weak to support the following generalization:

> *If a joint cooperative program is characterized by high formalization, standardization and relative resource commitment in its linkage dimensions then the cooperative program is likely to result in higher student achievement than a program characterized by low formalization, standardization and relative resource commitment.*

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CHAPTER 1

INTRODUCTION

The complexity of human service organizations[1] has led to an increased need for one organization to share or use resources offered by another. A consequence of competing for, or sharing resources between organizations is the development of dependency of one organization on other organizations. An example of such a dependent relationship is the joint cooperative program.

During the past decade increased attention has been directed toward interorganizational relationships, dependencies, and resource exchanges in an attempt to develop conceptual frameworks which could facilitate the study of interorganizational relationships. Marrett (1971) posited that one useful way of studying interorganizational relationships is at the relational level with the primary focus being on the forms of linkage that join organizations to each other. This particular dimension requires the specification of variables that link organizations and focuses on the relational network and its traits.

---

[1] The rubric "human service organizations" is used by Hasenfeld and English (1974) to describe those organizations whose primary purpose is that of maintaining and improving the general well being and functioning of people. Hasenfeld and English (1974:1) define "human service organizations" as

> the set of organizations whose primary function is to define or alter the person's behavior, attitudes, or social status in order to maintain or enhance his well being.

While a number of organizations may enter into interorganizational relations for the same purpose and engage in similar activities the logic is compelling that suggests some are more effective in their undertakings than are others. How might the differences between effective and less effective joint cooperative programs be explained in terms of interorganizational theory?

PURPOSE OF THE STUDY

Post-secondary institutions are complex organizations and, like many other kinds of complex organizations, develop interdependent relationships with other organizations as their need for physical and human resources intensifies. One major source of interdependent relationships for post-secondary institutions is allied health programs requiring special resources or clinical experiences that are unavailable within the boundaries of each institution. These needs result in the post-secondary institution developing joint cooperative programs and extended practicums in conjunction with external organizations such as hospitals. The allied health programs strive to be effective within the constraints of the interdependent relationship; however, they appear to do so with varying degrees of success.

The purposes, therefore, of this study were (1) to describe the interorganizational linkages of selected allied health programs in Alberta and Ontario, (2) to investigate the degree of integration among all participating organizations, (3) to determine the effectiveness of the selected joint cooperative programs, (4) to explore the relationship between the forms of linkage, degree of integration, and program effectiveness, and (5) to explore the possible association between the linkage dimensions joining a joint cooperative program.

BACKGROUND TO THE STUDY

Organizational theorists have devoted considerable attention to the study of formal organizations and their internal patterns and structure. However few studies have been directed at the interrelationships between human service organizations sharing scarce resources. Evan (1966:175) placed the problem in focus when he stated that "The phenomena and problems of interorganizational relations are part of the general class of boundary-relations problems confronting all types of social systems, including formal organizations." He further stated that interorganizational relations have been neglected because many of the concepts and propositions of organizational theory are primarily concerned with internal structural attributes and processes.

Hall (1972:322) outlined the importance of the interorganizational focus as a method of studying organizations with his observation that:

> Interorganizational relationships are affected by the wider environment of which they are a part. Political, cultural, ecological, demographic, technological, and economic conditions affect these relationships and, at any one point in time, are a constant consideration for the organizations involved. Shifts in these factors will affect the relationships.

It is clear from Hall's comments that organizations should be aware of the factors that can affect their relationship with other organizations. Further study of interorganizational relationships can only serve to increase the body of knowledge on this complex subject.

The Focus of the Study

The particular focus of this study was on the linkage mechanisms that join a college department to a hospital department. An example of a joint cooperative program that utilizes the facilities of a college and a hospital is the allied health program respiratory technology.

The reasons for selecting the program of respiratory technology are as follows. First, the program is divided into two distinct phases; the first year being conducted at the college, the theoretical component, and the second year in the department of respiratory technology of a hospital, the clinical component. This division necessitates considerable interaction and coordination between both organizations. Second, the Canadian Medical Association has a national accreditation process for respiratory technology programs. The reason for selecting an accredited program such as respiratory technology is, at least in part, to control a number of variables that have obvious impact on program outcomes. All accredited programs have the same academic entrance requirements, all instructors must be Registered Respiratory Technologists, the curriculum must conform to a national standard, and the general quality of the conjoint program must be acceptable to Canadian Medical Association standards. In addition, all graduates write the national registration examination of the Canadian Society of Respiratory Technologists upon successful completion of their program.

JUSTIFICATION FOR THE STUDY

The justification for this study is two-fold. First, the concept of interorganizational relationships appears to be an important area for further research, especially in what Hasenfeld and English (1974) have termed "human service organizations." Second, post-secondary institutions are becoming more involved with external organizations in order to develop career oriented programs. The forms of linkages developed by these organizations in their interorganizational relationships may not be as effective as they could be. By identifying the forms of linkages developed in different institutions organizations could, perhaps, increase their level of effectiveness by making changes in their linkage structure. Insights into how organizations link themselves with other organizations would be both interesting and useful.

Need for Further Research

Although the work on interorganizational relationships is still in the embryological stage compared to intraorganizational problems, numerous writers such as Hall (1977), Marrett (1971) and Aiken and Hage (1968) contend that it is a useful and valid area of study.

Hasenfeld and English (1974:540) stated:

> It is useful to study interorganizational relationships in order to understand the conditions that lead to the emergence of relationships between organizations, to become sensitive to consequences of these relationships on intraorganizational structure, processes, and clientele, and to become aware of the forms of linkages which effectively join organizations to each other.

During recent years human service organizations have had to face a number of issues that are interorganizational in nature. Examples include labor management relations, governmental coordinating agencies, formation of educational consortia, social welfare coordination, joint cooperative program development and external internships.

One major form of human service organization that is involved in a variety of interorganizational relationships is the post-secondary institution. Such institutions have to deal with more external agencies than before, vie for clients (students) and continue to operate despite a number of external constraints. An example of interorganizational relationships within post-secondary institutions is allied health programs which require students to receive clinical experience from other autonomous organizations such as general hospitals, medical clinics, or other external agencies. Since the experiences received by the students at these external organizations constitute an essential component of the curriculum the post-secondary institution and the external organizations must be linked in some manner. No specific research study has been identified to date on this particular interorganizational relationship.

Interorganizational Linkages

Marrett (1971) offered a conceptual framework which suggested that the forms of linkage between organizations is a useful analytic approach to the study of interorganizational relationships and worthy of further research. The major linkage dimensions identified included the degree of formalization, intensity of the relationship, the extent of mutual exchange of resources, both human and physical, and the extent to which procedures are standardized. Marrett (1971) contended that such an analysis should provide meaningful data on the form and intensity of the interorganizational relationships and hence some inference should be permissible on the degree to which the relationship can affect program outcomes.

Hall (1977) and Hasenfeld and English (1974) also stressed the importance of organizations being aware of the forms of linkages that join organizations. Such information, they argued, will permit an organization to better anticipate the consequences of the relationship and develop or change their organizational structure to improve the relationship.

The paucity of empirical evidence concerning the impact of interorganizational relationships on human service organizations suggests that an empirically based description and comparative analysis of selected joint cooperative programs could form a prerequisite basis for analysis, future direction and action.

EXPLANATION OF TERMS

In order to provide a common basis for understanding and for the purpose of clarity the following explanations were selected for terms that are used throughout the study. Only those terms which were used repeatedly are included in this list. Other terms are defined as they are introduced in the text.

1. Joint cooperative programs--are those programs which have two distinct phases of training each under the auspices of a functionally autonomous organization. The first year of training is conducted at a college or institute of technology, and the second year is completed at a hospital. Both phases of the program are intended to complement each other and, therefore, a high degree of coordination is required.

2. Linkage dimensions--refers to relational properties or characteristics of the connection between the parties involved in the joint cooperative program.

3. Formalization--is used in this study to refer to the degree to which the interorganizational relationship, necessitated by the joint cooperative program, is given official sanction by the parties involved.

4. Intensity--refers to the relative resource investment, both human and material, that an organization has to make in order that the joint cooperative program be viable.

5. Reciprocity--is the degree of mutuality of the relationship. The relative contribution of various parties involved in the joint cooperative program.

6. Integration--the degree to which there is unity of effort among the various parties involved in the joint cooperative program for the purpose of making the program a unified, sequential program.

In addition to the major definitions the following are explanations of the terminology used to describe the personnel involved in the study.

The term "college instructor" or "faculty" refers to full time instructional personnel employed primarily for the purpose of providing classroom and laboratory instruction in the program of respiratory technology.

The term "program head" or "college coordinator" refers to personnel employed primarily for coordinating and supervising the college portion of the program of respiratory technology.

The term "hospital instructor" or "hospital coordinator" refers to full time instructional personnel employed primarily for the purpose of providing instruction and coordination of hospital learning experiences in the department of respiratory technology.

The term "technical director" or "department head" refers to personnel employed full time in coordinating and supervising institutional operations in the department of respiratory technology.

Within this thesis, where the context so requires, the masculine whall include the feminine; and the feminine shall include the masculine.

ASSUMPTIONS

This study is based on the following assumptions:

1. The perceptions of respondents regarding integration, formalization, intensity, reciprocity and program effectiveness were a valid means of measuring these variables.

2. The Respiratory Technology Program is a representative joint cooperative program from which one can determine the forms of linkage between relatively autonomous organizations.

3. The measures of linkage dimensions employed in this study were appropriate means of describing the linkages found in joint cooperative programs.

4. The particular integration measures developed for use in this study were an appropriate means of assessing the degree of integration between the college and hospital components of the joint cooperative program.

5. The global measures of program effectiveness employed in this study were appropriate indicators for assessing the effectiveness of the joint cooperative program.

DELIMITATIONS

The following are the delimitations of the study:

1. The study was delimited to four joint cooperative Respiratory Technology programs, two in Ontario and two in Alberta.

2. The population of interest was delimited to all full time respiratory technology instructors and the program coordinator at the participating colleges. All participating hospital respiratory technology instructors, departmental supervisors with teaching responsibilities, and the respiratory technology department head and all the senior students in the respiratory technology program were also included.

3. Interorganizational analysis was delimited to the relational dimensions of formalization, intensity and reciprocity.

LIMITATIONS

The assumptions and delimitations previously outlined represented certain limitations to the study. However, other limitations can be stated.

The findings of this study were valid at the time of data collection. Since the data were based on the perceptions of the respondents in each institution, future changes in personnel or linkage dimensions could render the data invalid.

A major limitation of this study was its use of perceptions of respondents as a means of measuring linkage dimensions, degree of integration, and one aspect of program effectiveness. The perceptions of an individual are based on what he thinks the situation is from his life orientation and hence distortion is possible. Notwithstanding the possibility of distortion or bias it was assumed that perceptions of the respondents generally resulted in authentic and valid responses.

Another limitation of this study was the limited generalizability of the findings. While the study did examine four programs of respiratory technology in two provinces, the programs selected for this study were specialized and unique. Therefore, the specific findings can be generalized only to similar joint cooperative programs where two or more autonomous organizations cooperate for the purpose of establishing a given educational program.

A final limitation of the study was the limited volume of literature available on interorganizational relationships and the ways in which one can approach the concept. This relative dearth of material and the lack of empirical data and instrumentation posed considerable frustration. There were a number of studies that presented theoretical ways of examining interorganizational relationships but specific definitions of the various dimensions involved were sparse. Few authors provided indicators of interorganizational relations and how one might measure them. No study was identified that specifically suggested how interorganizational relationships might be appropriately studied in an educational setting.

ORGANIZATION OF THE THESIS

This chapter has presented (1) an introduction to the problem, (2) the purpose of the study, (3) the background to the study, (4) the focus of the study, (5) the justification for the study, (6) an explanation of terms, (7) the assumptions, (8) the delimitations, and (9) the limitations.

Chapter 2 reviews pertinent research and literature related to interorganizational relationships and provides a conceptual basis for the study. The methodology employed in data collection and analysis and the development and refinement of the instrumentation used for data collection are described in Chapter 3. Chapter 4 provides a description of the student and faculty responses in the study sample. Chapters 5, 6, 7 and 8 provide a description of each of the joint cooperative programs studied, a profile of the linkage dimensions, the degree of integration between the college and hospital components of each program, and the perceived effectiveness of each joint program. Chapter 9 examines the differences among the individual joint cooperative programs on linkage dimensions, degree of integration, and program effectiveness. Chapter 10 explores the relationship as found in this study between linkage, integration and effectiveness and discusses the appropriateness of studying joint cooperative programs at the relational level. The final chapter presents in summary form the results of the data analysis and concludes with a discussion of conclusions, recommendations, and implications derived from this study.

CHAPTER 2

REVIEW OF RELATED LITERATURE AND CONCEPTUAL FRAMEWORK

In Chapter I several study purposes were stated about which there exists little research based knowledge. There does however exist considerable information on the open systems perspective for the study of organizations. Stemming from the open systems concept a number of authors have explored the issues and complexities of interorganizational relationships. As this study was an extended case study of four joint cooperative programs involving post-secondary institutions and participating hospitals it was considered necessary to provide a review of literature and conceptual framework that:

1. Reviews the open systems perspective as the fundamental theoretical basis for the study of interorganizational relationships.
2. Outlines the reasons why organizations develop interorganizational dependencies.
3. Elaborates on the concept of linkage dimensions as an important approach to the study of interorganizational issues.
4. Explores the issues involved in assessing program effectiveness.
5. Provides a conceptual framework which encompasses linkage dimensions, degree of integration and program effectiveness.

This study was concerned with examining the forms of linkages that existed between post-secondary institutions and hospitals engaged in a joint cooperative program. In order to study interorganizational relationships through linkage dimensions it was necessary to determine a perspective which could be adapted in order to formulate an analytic and conceptual framework for analysis. Mouzelis (1968:56) explained the value of such an endeavor:

> It sets the theoretical boundaries; it discriminates between relevant and irrelevant properties; it indicates what is going to be explained and what is going to be considered as given.

Conventional wisdom suggested that there were a number of theoretical approaches which could be employed in the description and comparative analysis of joint cooperative programs. One theoretical approach that appeared to have considerable utility for this study was the open systems perspective. Schein (1970:106) commented:

> . . . organization theorists have begun to build more complex models which attempt to take into account relationships between systems and their environments. These new systems models do not have the neatness or completeness of the classical concepts of organization, but they are a closer approximation of what the researcher finds when he actually studies organizations.

In order to comprehend the value of the open systems perspective in the examination of interorganizational relationships it was considered useful to briefly describe the open systems perspective and how it provided the fundamental framework for this study.

Organizations and the Open Systems Perspective

Early traditional approaches to the study of organizations operated from the basic tenet that organizations could be understood as a number of rationally coordinated components deliberately directed toward the achievement of some explicitly stated purpose through the division of labor and hierarchy of authority.

Numerous authors including Hall (1977), Schein (1970), and Katz and Kahn (1966), were all explicit that such a static view of organizations was inadequate as a conceptual basis from which theorists could formulate theoretical and analytic tools for the study of organizations. The view of an organization being the sum of its component parts failed to account for the complex nature of organizations. Clearly, not only did the internal dynamics of organizations generate forces irreducible to component parts but the external environment also generated constraints and pressures not considered in earlier perspectives. It became apparent that a position had to be developed which could take into consideration the complexity and high degree of interaction of the component parts and yet would be broad enough in scope to also include the impact of the various external factors that appeared to exert considerable influence over the organization.

The broader open systems perspective as described by Schein (1970:104-116) appeared to embrace the dynamic nature of organizations. The open systems perspective views organizations as dynamic systems in constant interaction with their environment through the processes of input, through-put, and output. This conceptualization for the understanding of organizations presents an energic input-output system in which the energic return from the output provides the necessary reactivation for the system to continue. Katz and Kahn (1966:16-17) elaborated on this approach and stated that:

> Social organizations are flagrantly open systems in that the input of energies and the conversion of output into further energic input consist of transactions between the organization and its environment.

It was apparent that a major consideration of the open systems concept was the impact of the external environment on the organization. Further it was other organizations that played an important role in affecting a focal organization. The impact of other organizations as important environmental factors on a focal organization has been clearly documented in the writings of Terreberry (1968), Aiken and Hage (1968), Evan (1966) and Litwak and Hylton (1962). Recently Hasenfeld and English (1974:540-544) discussed at length that there is an increased organizational interdependence observed in human service organizations as they become more complex and diversified.

Schein (1970:104-105) placed the issue in focus when he stated that:

> Perhaps the most important argument for a systems conception of organization is that the environment within which organizations exist is becoming increasingly unstable. With the rapid growth of technology, the expansion of economic markets and the rapid social and political change, come constant pressures for organizations to change, adapt, and grow to meet the challenges of the environment.

According to the open systems perspective then, organizations engage in essential reciprocal interactions with their environment in an effort to maintain dynamic equilibrium. These interactions involve input, through-put and output activities which permit organizations to import more energy than they expend. By such activities open systems decrease entropy and do not reach static equilibrium or rundown as totally closed systems do. Hence open systems fulfill their needs through input from other systems, and reciprocally fulfill the needs of other systems through their output.

As a consequence of this relationship with other systems and the multiple links between the organization and its environment the clear delineation of organizational boundaries is difficult. Instead of viewing organizational boundaries as static impermeable limits they are viewed as being open and only relatively identifiable. While organizations appear to exhibit characteristics such as size, shape, function or structure, they are better conceptualized as amorphous entities engaged in constant input, through-put and output processes.

Another impact considered by the open systems perspective was elaborated by Hall (1977:56) who suggested that the open systems model regards organizations as a "natural whole" in which the realization of the specific goals of the organization is important but in actuality is only one of several needs that the organization must address itself to in order to adapt and change in accord with environmental pressures. One of the specific needs which can lead to neglect of goal seeking behavior is that of survival. Organizational change in this context is seen as relatively unplanned, adaptive responses to threats to the dynamic equilibrium of the organization. In this light the organization is viewed as emergent, rather than guided by organizational goals and rationality.

The discussion thus far has indicated that the open systems perspective is much broader in scope than many earlier perspectives of organizations. However, the model is considerably more exacting and difficult when used for research. Hall (1977:59) elaborated on the problem of operationally applying the principles of the general systems theory in research and offered the following comment:

> Few researchers have the tools or the ability to take into account all of the various components that must be included in even a relatively simple open-system model.

However, notwithstanding such an observation it is clear that the very nature of organizations indicates that they do accomplish certain tasks. They do modify their inputs, and produce outputs. Decisions are made to achieve given ends; and these things are done on a relatively predictable and reasonably stable basis.

In order to reconcile the difficulties of applying open systems theory to organizational research Hall (1977:60) concluded that:

> In essence, organizations attempt to be rational, controlling their internal operations and environment to the greatest extent possible, but never achieving a totally closed rational system. How well the organization achieves rationality depends upon the strength of the internal and external pressures and the organization's capability of control.

The Systems Perspective Employed in this Study

This study was concerned with examining the forms of linkages that existed between a post-secondary institution and a hospital engaged in a joint cooperative program. Since by definition, joint cooperative programs are only developed when there is a degree of interdependence between the organizations involved, then it was appropriate to consider these organizations as being open to environmental influences generated by the other organizations over which they have limited control. Therefore the selection of literature for this chapter, and the method of analyzing the joint cooperative program was made from a relatively open systems perspective which recognized the importance of the impact of organizations on each other when engaged in a joint cooperative program. In order to ascertain whether or not post-secondary institutions developed similar linkage dimensions in their joint cooperative programs, it was considered necessary to select institutions that had similar external environments and were therefore subjected to similar influences. The open systems perspective provided the rationale for this selection.

Open systems theorists repeatedly emphasized that organizations are more than a mechanistic collection of individuals, hence it was considered appropriate to employ a perceptual approach to gather data on how institutional members perceive the degree of integration of the joint cooperative program. This approach was anticipated to at least in part account for the dynamic aspect of organizations which is the product of interactions and interdependencies of the constituents.

Finally, the open systems perspective in part provided justification for using global measures of program effectiveness rather than attempting to describe size, structure or configuration of institutions coupled with other quantifiably difficult measures of program effectiveness.

INTERORGANIZATIONAL RELATIONSHIPS: AN OVERVIEW

This section of the chapter provides a review of literature directed toward the complexities of interorganizational relationships. The earlier discussion on the open systems perspective outlined the importance of environment on organizations. This section traces some of the reasons why organizations develop interorganizational relationships, the consequences of the relationship and ways in which interorganizational relations can be studied. The final part of this chapter on interorganizational theory reviews current thinking and research on interorganizational relationships and culminates with a model for examining linkage dimensions between organizations involved in a joint cooperative program.

Interorganizational Relationships

Organizational theorists have devoted considerable attention to the study of formal organizations and their internal patterns and structure. However few studies have been directed at the interrelationships between human service organizations sharing scarce resources.

Prior to investigation of the research and consequences of interorganizational relationships it is useful to ask why do organizations enter into relationships with other organizations? An early study reported by Guetzkow (1966:31) on group dimensions found that autonomy emerged as a reliable dimension when defined as "the degree to which a group functions independently of other groups and occupies an independent position in society." The issue of organizational autonomy has been elaborated by a number of authors including Hall (1977), Thompson (1967) and Litwak and Hylton (1962). These authors all agree that organizations strive to attain a position of relative autonomy. According to Thompson (1967:24) in order that organizations may maintain their autonomy they "tend to seal off their core technologies from environmental influences . . . by buffering their technical cores with input and output components." Thompson (1967:24) further posited that if buffering is not completely successful then the organization must assess the impact of environmental influences by examining the:

1. Constraints that the organization must face
2. Contingencies which the organization must meet and
3. Variables which the organization can control.

Considerable attention has been given the topic of environmental forces and conditions important to interorganizational relationships. Terreberry (1968:606) developed an integrative framework based on the open systems viewpoint for the study of organizational environments. The basic assumptions underlying her integrative network were:

1. Organizational environments are more turbulent as the complexity of the organization increases.

2. Complex organizations are becoming less autonomous.

3. Other organizations are increasingly important components of an organization's environment.

These assumptions led Terreberry (1968:590) to present two hypotheses concerning organizational environment.

> That organizational change is increasingly externally induced and that organizational adaptability is a function of ability to learn and perform according to changes in the environment.

Benson (1975:247) found that the environment in organizational network relationships has certain dimensions that are identifiable. These dimensions include:

1. resource concentration/dispersion,
2. power concentration/dispersion,
3. network autonomy/dependence,
4. environmental dominance patterns,
5. resource abundance/scarcity, and
6. environmental-network control mechanisms.

Albeit brief, the literature review indicated that organizations developed interorganizational relationships because of a dependence or need for some form of scarce resources. Aiken and Hage (1968:588) summarized why organizations enter into interorganizational relationships and stated that:

> Organizations are pushed into such interdependencies because of their need for resources--not only money but also resources such as specialized skills, access to particular kinds of markets and the like.

Joint Cooperative Medical Programs

In human service organizations the joint venture or cooperative program is one reason that organizations enter into interorganizational relationships. Aiken and Hage (1968) studied joint cooperative activities among health and welfare organizations and postulated that joint ventures served the objective of providing access to scarce resources necessary for a given program while simultaneously maintaining the autonomy of the organization.

The arena of the joint cooperative program is a cloudy one. Although Aiken and Hage (1968) suggested that autonomy is maintained in cooperative programs, others such as Marrett (1971), Blishen (1969) and Guetzkow (1966) disagree. Their disagreement is based on the way in which the organizations involved are linked to each other, for example, if the joint cooperative program is formalized through an explicit contractual agreement then the relative autonomy of both organizations is decreased. However if the program is based on tacit, informal relations then the relative autonomy of the participating organizations is maintained.

Since this study was directed at a joint cooperative program between a post-secondary institution and a teaching hospital, Blishen's (1969:24-44) review of medical education in Canada is particularly illuminating. He stated that the teaching hospital is an integral element in a medical education program but no medical school or university owns and operates its own university hospital. The prevailing arrangement is for medical faculties to enter into contractual agreements with local accredited hospitals for use of part of their facilities.

According to Blishen (1969) a number of difficulties arise in the relationship between the university and the affiliated hospitals which are derived in part from their seemingly divergent goals. The Faculty of Medicine is primarily concerned with teaching and research while the major foci of the teaching hospital is on patient care and community service. The possibilities of conflict between these divergent goals are obvious. Further difficulties may emerge over the appointment of teaching staff in the hospital. Currently such appointments are the responsibility of the university, and since the appointments result in further prestige and professional standing for the appointee it is not surprising that the control over such appointments should create some difficulty between the institutions involved. Other difficulties arise over the issue of responsibility and control of the students while they are in the hospital. Blishen (1969) closed his discussion on the problems of the joint cooperative program for medical students with the additional issues of differing standards of patient care between the hospital and the university teaching staff, and the problems of conducting research using the facilities of a different organization. A final issue, although not specifically raised by Blishen, is the evaluation of the clinical facilities and experiences received by the student.

A review of the indices available for research revealed very few empirical studies on interorganizational relationships between human service institutions especially on those issues identified by Blishen (1969). A number of authors presented theoretical frameworks for the study of interorganizational relationships but few empirically tested their hypotheses. The one empirical study by Aiken and Hage (1968: 926) on joint cooperative programs resulted in their conclusion that:

> Our assumptions help to explain the steadily increasing frequency of organizational interdependency, especially those involving joint programs. As education levels increase, the division of labor proceeds (stimulated by research and technology) and organizations become more complex. As they do, they also become more innovative. The search for resources needed to support such innovations requires interdependent relations with other organizations. At first, these interdependencies may be established with organizations with different goals and in areas that are more tangential to the organization . . . . It is the scarcity of resources that forces organizations to enter into more cooperative activities with other organizations, thus creating greater integration of the organizations in a community structure.

This section of the chapter has identified that human service organizations enter into interorganizational relationships through joint cooperative programs. The purpose of such relationships is to acquire scarce resources so that the organization may achieve a specific objective. In the case of medical programs it is clear from the discussion by Blishen (1969) that such an endeavor is fraught with difficulties however such a joint arrangement is mandatory for an adequate medical training program.

Approaches to Interorganizational Analysis

In a comprehensive review of the principle approaches taken by researchers in studying interorganizational relationships in the health and social welfare area Marrett (1971:84-89) identified five dimensions along which organizational relations may be studied. The major distinction among the five dimensions rests principally on the units of analysis (see Table 1).

Table 1

Principal Approaches to Interorganizational Analysis and Representative Variables

	Approaches				
	Intraorganizational Properties	Comparative Properties	Relational Properties	Formal Contextual Properties	Non Organized Contextual Properties
Variables	Complexity Innovativeness Openness of communication Resource accessibility Autonomy	Goal similarity Resource compatibility Compatibility of philosophies Similarity of structures	Formality Intensity Reciprocity Standardization	Size of organizational "set" History of interlocking relations Integration	Demographic structure Economic conditions Concentration of resources Community support

Modified from Marrett (1971:84)

The first dimension focuses on intraorganizational properties of an organization affecting or affected by interaction with other organizations.

The second dimension analyzes interacting organizations by comparing certain attributes such as goal similarity in order to determine the relative compatibility of the organizations.

The third dimension described by Marrett (1971) is termed "relational" as its focus is on the linkages between the organizations. It is the linkage dimension that is central to this study and it will be elaborated upon later in the thesis.

The fourth dimension suggests the channels and types of influence exerted on interorganizational relationships by the larger organizational setting that surrounds that relationship are critical to interorganizational study.

The final dimension suggests that social processes and conditions affect interorganizational relationships. Emphasis is placed on the unorganized environment and the degree to which it is subject to rapid change.

Although Marrett (1971:88) identified five dimensions for the study of interorganizational relations described in the literature she pointed out that they are not mutually exclusive nor in conflict. She commented:

> In fact, they should be viewed as complementary approaches to the study of interorganizational relations. Barriers to or facilitators of cooperation may be derived from the structural characteristics of an organization, from differences between organizations, from the nature of the relationship, from existing organizational activities, or from social processes. A total analysis of interorganizational relations requires a thorough understanding of the interplay between variables operating on all levels. But such an analysis is dependent upon the delineation of these variables.

Notwithstanding the above comment, the primary focus of this study was the relational level and the specification of variables linking one organization with another. This particular dimension focuses on the network, its traits and changes; neither the individuals nor comparative properties of the organizations involved are central to this position. The clear delineation and analysis of the linkage mechanisms that join human service organizations should provide a useful framework for the examination of interorganizational relationships that occurs when two or more organizations cooperate in the development of a joint program.

Interorganizational Linkages

Turk (1973:37) conducted an extensive study of organizations and their interrelationships through the study of influence of municipal government and community voluntary associations on the formation of hospital councils in 130 cities in the United States. The major finding applicable to this study was that:

> . . . the integrative significance of government and voluntary organizations may rest less on linking individuals to their environment than upon linking organizations to one another, thereby supporting the feasibility of the interorganizational level of analysis.

Mindlin and Aldrich (1975:390) also postulated that it is theoretically valid to study only the structures of organizational units that relate to boundary spanning functions. These units may be identified as those that are dependent on another organization for certain resources. They further posited that the dependency only affects the boundary unit and not necessarily the total organizational environment.

Commentary by Turk (1973) and Mindlin and Aldrich (1975) suggested the need to focus on the structure of the interaction among organizations. Marrett (1971) reviewed a number of the issues involved, presented some definitions, and provided measurable indicators of dimensions along which interorganizational relations may be studied. In her conceptual framework of relational dimensions Marrett (1971:95) defined four linkage dimensions which provided a basis for identifying linkage variables found in interorganizational relationships. The dimensions were:

1. Degree of Formalization;
2. Degree of Intensity;
3. Degree of Reciprocity; and
4. Degree of Standardization.

The first dimension of formalization was considered useful for this study because several analyses of interorganizational relations noted variations in the extent to which the characteristics and requirements of the relationship were made explicit. Hall (1972:196) provided extensive coverage on the concept of formalization and defined it as the ". . . organizational technique of prescribing how, when, and by whom tasks are to be performed." Guetzkow (1966:32) stated that the interlocking of competition and cooperative relations among organizations is accomplished through a variety of means, some of which are relatively loose and informal while others are quite formalized. Marrett (1971:89) contended that formalization is highly appropriate when applied to interorganizational analysis and used the term to refer to the ". . . degree to which the interdependency is given official sanction by the parties involved." The degree of formalization can vary from a formal written agreement to tacit, informal relationships. Therefore Marrett (1971:89) suggested that one indicator of the degree of formalization of the relationship is the degree to which the interdependency is given offical sanction. Such sanction may vary from explicit written agreements to tacit informal relations.

The literature on the degree of formalization of interorganizational relations is sparse,however, formal agreements are often perceived as reducing organizational autonomy hence there is considerable reluctance on behalf of organizations to formalize their interactions. Guetzkow (1966) hypothesized that more formal arrangements are likely to develop out of previously informal interactions which have been found to be mutually satisfying. However as formalization of the interorganizational relationship increases through the development of formal contracts or agreements the freedom of choice, innovation, and change all tend to decrease (Hall, 1972, Hage and Aiken, 1968). Notwithstanding these possible consequences, Pfeffer (1972:383) concluded that long term contracts may operate to stabilize interorganizational relations and reduce environmental uncertainty.

Litwak and Hylton (1962:400) stated that highly formalized interactions can result in conflict between the organizations involved and suggested that one approach to the reduction of conflict between organizations is the development of some form of coordinating mechanism. The type of coordinating mechanism developed between the organizations involved is hypothesized to emerge from the interaction of three variables: the degree of organizational interdependence, level of awareness or need and the degree of standardization of the units being coordinated. Guetzkow (1966:32) added another dimension by suggesting that the degree of coordination is also important. He stated:

> The degree of coordination which exists among organizations may vary from minimal, tacit arrangements of co-existence to maximal, highly explicit contractual arrangements of almost complete integration.

These views led Marrett (1971:90) to conclude that a second indicator of formalization is the extent to which a coordinating mechanism exists between the organizations. Marrett (1971:91) pointed out that formal agreements and the degree of coordination should be directly associated however this assumption must be tested not merely assumed. Clark (1965) posited that the formal agreement itself may serve as a controlling function hence rendering coordination unnecessary. This of course is dependent upon the degree to which the agreement is explicit and delineates responsibility for all parties in the relationship. On the other hand should the relationship be unofficial then a formal coordinator is highly unlikely.

Another linkage variable identified by Thompson (1967) that is related to formalization is the degree to which organizations develop standardized ways of interaction. Thompson (1967:17) explained that standardization assures that each segment of the organization is operating in a manner consistent with other segments of the organization that are involved in boundary related activities. Marrett (1971:94) modified Thompson's approach to standardization and stated that "standardization refers to the extent to which the units of exchange are clearly delineated."

In her conceptualization Marrett (1971:94) separated standardization from formalization yet Hall (1972) and Litwak and Hylton (1962) are clear that the degree of fixedness of rules and procedures is definitely another indicator of formalization rather than a separate dimension. For the purposes of this study standardization was considered the third indicator of formalization.

A second linkage dimension of interorganizational relations according to Marrett (1971:91) is the degree of intensity of the relationship. Not only do interorganizational relationships appear to differ in their degree of formalization but they diverge as well on the involvement required. At one end of the continuum is the very informal get-togethers in which the personnel interact to merely become acquainted. At the other extreme are those encounters in which critical issues are discussed to ensure continuation of the project or relationship. In order to measure intensity Marrett (1971:92) postulated that there are two forms of intensity; one is the frequency of interaction between the personnel involved and the other is relative resource commitment made by each organization in the relationship.

As this conceptualization was developed it became clear that a number of possibilities could exist in the forms of linkage dimensions generated in a joint cooperative program. For example, if an organization has a high resource commitment in a cooperative program then it would be unlikely that the relationship would be informal. Conversely, because joint cooperative programs involve other organizations over which participating institutions have little control then organizations are unlikely to invest considerable resources in such a venture.

The third major interorganizational dimension identified by Marrett (1971:92) is the degree of reciprocity of the relationship. Levine and White (1961:559) in their detailed discussion on exchange asserted that the direction in which exchange occurs is variable. Guetzkow (1966:28) pointed out that although interdependencies are often considered symmetric in fact some parties to the exchange may exert greater influence in determining the conditions surrounding the exchange than have the others. It is suggested by Marrett (1971:93) that the degree of reciprocity of the arrangement does in fact capture the power symmetry of the relationship. Salancik and Pfeffer (1974:149) stated that power usually rests with those persons who control scarce resources within an organization. Hence power is vested in individuals or groups of individuals who possess or control a resource desired by other persons or organizations. Benson (1975:233) suggested that the derivation of power in interorganizational relationships is found in the organization that has control over contingencies vital to resource acquisition by a member organization. Marrett (1971) concluded that "a critical dimension of interorganizational relations among autonomous groups is the degree of reciprocity" or the extent of the power dispersion or mutuality of the relationship.

Two indicators of reciprocity emerged from the literature which encompass the issues raised by Guetzkow (1966) and Levine and White (1961). The first is the degree to which resources are mutually exchanged between the participating organizations or as Marrett (1971: 95) described it "resource reciprocity." A second indicator of the mutuality of the relationship is the extent to which the terms of the relationship are mutually agreed upon or as Marrett (1971:95) stated "definitional reciprocity." As pointed out earlier an important consideration of the indicators of reciprocity is that they appear to tap the power symmetry of the relationship. Schmidt and Kochan (1977: 220-222) discussed at length the problems surrounding the power-dependency approach versus exchange approach to interorganizational relations and stated an integrated view is necessary. The indicators of reciprocity appear to bridge that gap.

The discussion thus far has identified three linkage dimensions and their attendant indicators that could be used as a basis for a study on interorganizational relationships. Inspection of the linkage dimensions identified suggests that a number of the linkage variables are more interrelated than others. Marrett (1971:95) proposed that two models of interorganizational linkages could exist in joint programs. The two models predict specific relationships among the linkage indicators depending upon the existence of certain linkage characteristics. Table 2 presents a summary of the two models hypothesized by Marrett (1971). According to Marrett (1971:97) joint cooperative programs should conform to the second model of interorganizational relationships however she suggested that the second model is unlikely because organizations are hesitant to make the commitments and kind of investments required by such a model. Marrett (1971:97) commented: "If this is indeed the case, then additional research is needed not so much on the first model, as on the constraints to the realization of the second model."

Table 2

The Interrelationship of Interorganizational Dimensions

Dimension	Model 1	Model 2
Formalization		
Agreement formalization	Low	High
Structural formalization (coordination)	Low	....[1]
Procedural standardization	Low to Medium	High
Intensity		
Frequency of interaction	Low to Medium	....
Relative resource commitment	....	High
Reciprocity		
Resource reciprocity	Low	High
Definitional reciprocity	Low to Medium	High

[1] Wide variation possible. No specific prediction made for the occurrence of the given variable.

Modified from Marrett (1971:95).

The constraints of the second model are apparent in light of the earlier discussion. Organizations are hesitant to enter into formal agreements and commit extensive resources with other organizations unless the benefits to the organization are clear and explicit. Since organizational goals are often obscure the benefits from interorganizational relationships can also be difficult to ascertain. Hence the realization of model two is likely to be dependent upon the degree to which organizations perceive benefits from the joint cooperative program.

The literature review on interorganizational relationships indicates that an investigation on the ways in which organizations are joined to each other would be both interesting and useful. For the purposes of this study it was decided that the linkage dimensions or relational approach as described by Marrett (1971) was appropriate as the framework of this study. Table 3 presents the major linkage dimensions identified by Marrett (1971) with attendant explanations. The clear delineation of linkage dimensions found in joint cooperative programs should permit exploration of the two models proposed by Marrett (1971) and possibly identify some of the constraints that might prevent a joint cooperative program from conforming to the highly formalized, standardized, and intense situations demanded by the second model.

Table 3

Interorganizational Variables

Linkage Dimension	Explanation
A. Formalization of the relationship Measurable variables: a) Formal agreement--written...informal b) Coordination--formal coordinator...informal c) Procedural standardization--high...low	A. a) The degree to which the exchange is given official sanction--Marrett (1971) b) The extent to which an intermediary coordinates the relations--Litwak and Hylton (1962) c) The extent to which procedures are clearly delineated--Hall (1972)
B. Intensity of the relationship Measurable variables: a) Frequency of interaction--high...low b) Relative resource commitment--high...low	B. a) The kind and amount of involvement demanded--Marrett (1971) and Hall (1972) b) The resource investment (human, funds or services) required by the relationship--Marrett (1971)
C. Reciprocity of the relationship Measurable variables: a) Resource reciprocity--unilateral..none b) Definitional reciprocity--unilateral...none	C. a) The degree to which resources are mutually exchanged--Levine and White (1961) b) The degree to which the terms of the interaction are mutually agreed--Guetzkow (1966)

PROGRAM EFFECTIVENESS

Since one of the purposes of this study was to assess the effectiveness of the four programs studied, a literature review was necessary to derive a suitable framework or model for program evaluation. A brief library search revealed a considerable body of literature on educational evaluation and the techniques that can be employed for the determination of program effectiveness. In order to provide a focus for this section of the chapter a review of current thinking on the process of evaluation was considered useful.

Evaluation

The rubric "evaluation" has been defined in numerous ways therefore a better understanding on the subject may be gained if some definitions of evaluation are presented. Further a short description of some of the evaluation models outlined in the literature was considered useful. The final section on evaluation focuses on the work of Robert Stake (1967) and his eclectic model of program evaluation and how it was used in this study.

Definitions of evaluation. Dressel (1976:1) defined evaluation as "both a judgment on the worth of a program, procedure or individual and the process whereby that judgment is made." Stufflebeam (1971:1) presented the Phi Delta Kappa definition of evaluation as "the process of delineating, obtaining, and providing useful information for judging decision alternatives." Popham (1972:1) commented that:

> For most educators the term "evaluation" means appraising the worth of an educational undertaking . . . . Generally such evaluations are undertaken with a view to make decisions.

Numerous other definitions supported the view that evaluation is primarily conducted to provide necessary information for decision-makers so that important decisions on program improvement, continuation or termination can be made from an appropriate data base.

Evaluation models. MacKay and Maguire (1971:16) highlighted three models of evaluation; namely, the Neo Tylerian models which address themselves to the formative evaluation of the learning process and sequence of objectives; the eclectic models such as the one formulated by Stake (1967) which concerns itself with the collection of data both to answer and raise issues and concerns; and finally the administrative models such as Stufflebeam's (1967) which collects information for a decision-making process. For the purposes of this study Stake's model appeared to have some utility and warranted further elaboration.

In developing his eclectic model Stake (1967) drew heavily on the earlier work of Cronbach (1963) who outlined the importance of relating evaluation to decision-making and that of Scriven (1967) who advocated the development of an adequate evaluation study by comparison. Stake (1967) suggested that evaluation must be formalized into a systematic procedure which involves two major activities namely description and judgment of the program being evaluated. According to Stake (1967:527) in order to describe or judge a program the evaluator must gather specific data from a variety of sources. Whether the immediate purpose of data gathering is for description or judgment or both, three bodies of information should be tapped. The three types of data conceptualized by Stake were antecedent, transaction and outcome data (see Figure 1). Antecedent data is that information related to any condition that existed

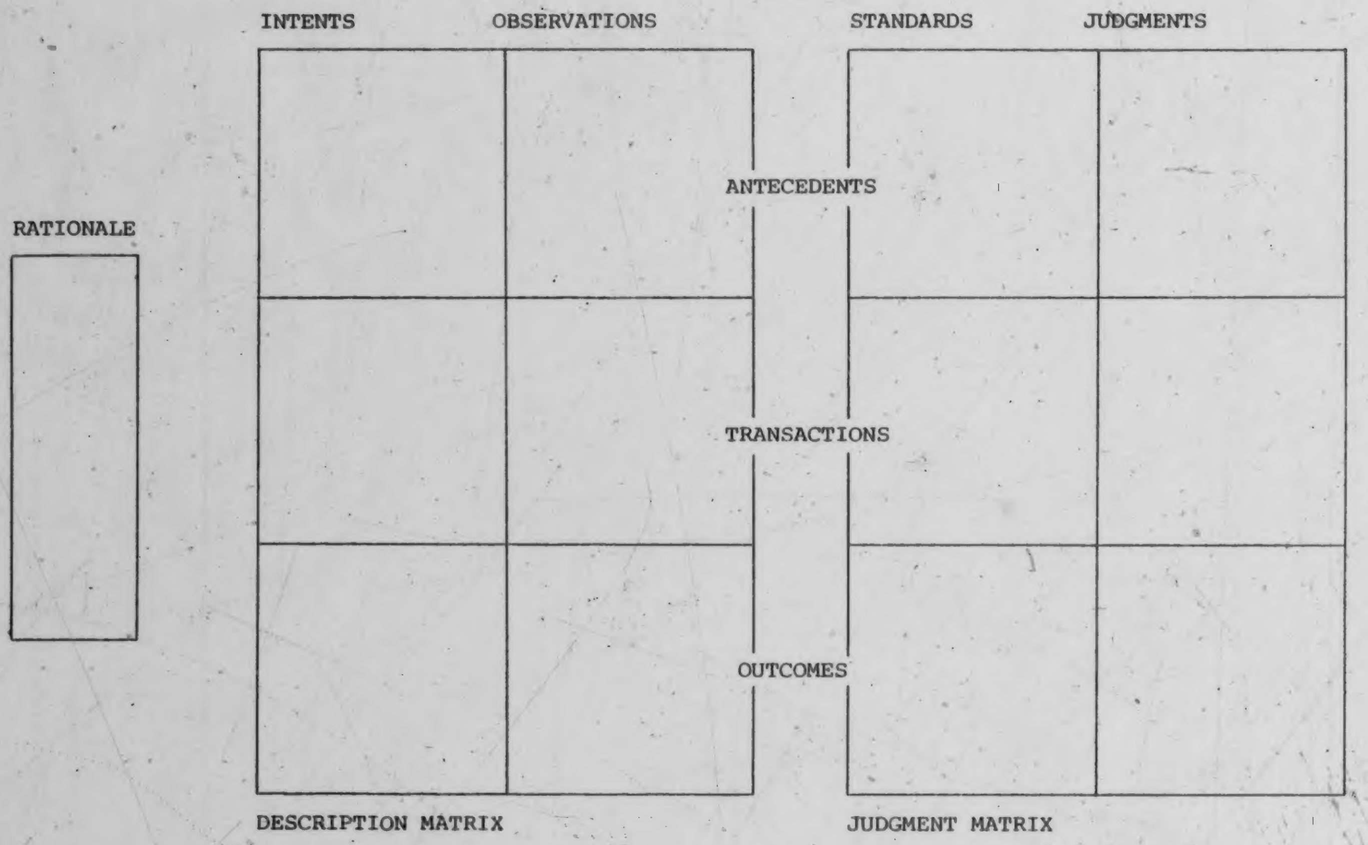
RATIONALE
INTENTS
OBSERVATIONS
STANDARDS
JUDGMENTS
ANTECEDENTS
TRANSACTIONS
OUTCOMES
DESCRIPTION MATRIX
JUDGMENT MATRIX

Figure 1

A Layout of Statements and Data to be Collected by the Evaluator of an Educational Program (Stake, 1967:529) prior to the teaching process. Transactions are those personal encounters among the constituents of an educational process including teachers, students, parents, peers, counselors and others who come in direct contact with students. Outcomes of course refer to the products of the educational process such as the abilities, achievements, attitudes and aspirations of the students. Stake pointed out that the three types of information are not necessarily distinct rather the categories should be used to stimulate thought about the data and not utilized as a simple mechanism for categorization. Once the data have been gathered and organized into the three categories in either one or both major activities then a basis for judgment has been established. Stake noted that there are two bases for judging a program; judgment with respect to absolute standards as reflected by personal judgments and judgment with respect to relative standards as characterized by alternative programs. (Figure 2 symbolizes this process.) This model as developed by Stake (1967) was considered an excellent base for the assessment of the joint cooperative programs investigated in this study.

Program Accreditation

As mentioned above Stake (1967) posited that there are two bases for judging the worth of an educational program; judgment with respect to absolute standards as reflected by personal judgments and judgment with respect to relative standards as characterized by alternative programs. In order to gather data on the second form of judgment an examination of the concept of program accreditation was undertaken. This review was considered useful albeit brief because all four programs involved in the study have been subjected to an

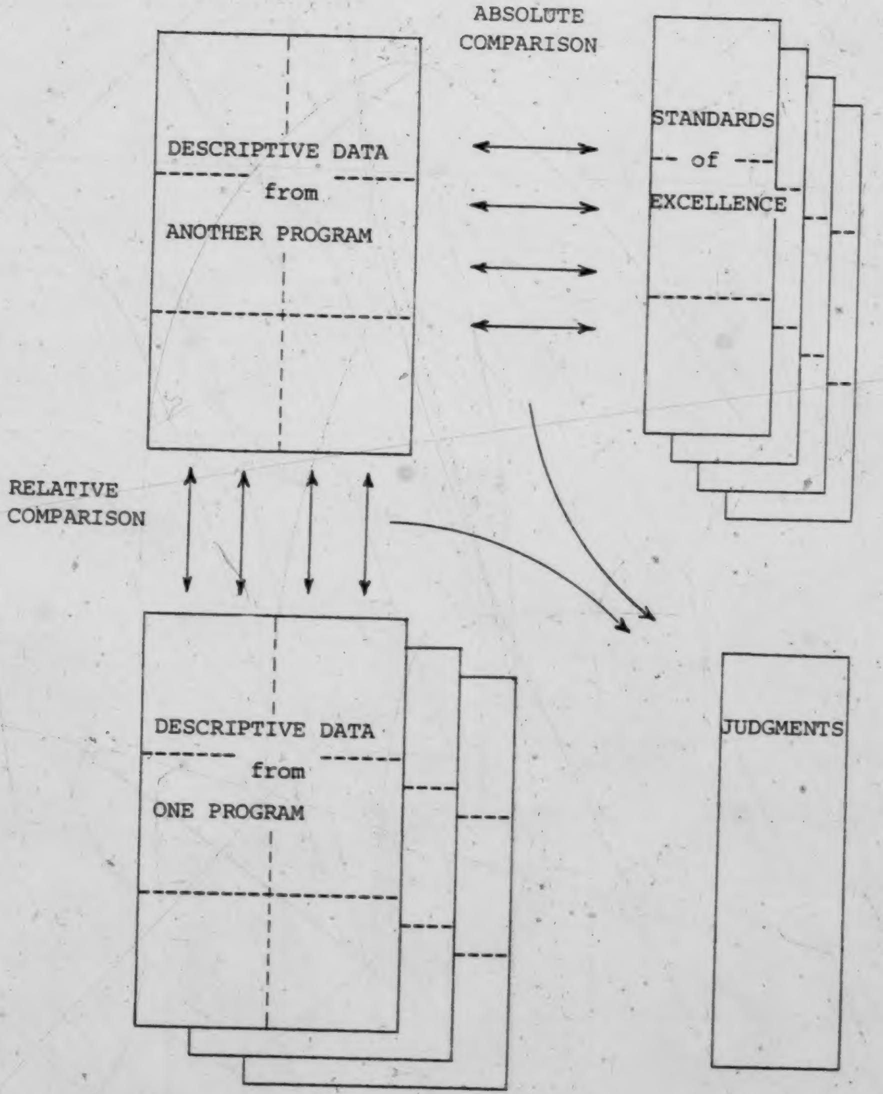
ABSOLUTE COMPARISON
STANDARDS -- of --- EXCELLENCE
DESCRIPTIVE DATA from ANOTHER PROGRAM
RELATIVE COMPARISON
DESCRIPTIVE DATA from ONE PROGRAM
JUDGMENTS

Figure 2

A Representation of the Process of Judging the Result of an Educational Program (Stake, 1967:537) accreditation survey and on-site visitation by the Canadian Medical Association within the past three years.

According to Anderson, et al. (1975:4-8) accreditation is defined as ". . . the process by which a program or institution is recognized as being in conformity with some agreed-upon standard." In Canada allied health programs are subjected to the process of accreditation by the Canadian Medical Association. The Association, through its Council on Medical Education, and in cooperation with other professional and educational societies, has established national advisory committees for several allied health occupations. These advisory committees, known as Conjoint Committees on Accreditation of Training Programs, are composed of representatives from the professional and educational associations most closely connected with the specific allied health occupation. The Conjoint Committees conduct regular on-site surveys of allied health education programs to evaluate the quality of education being provided. Programs that meet or exceed the standards established by the Conjoint Committees receive accreditation.

Dressel (1976:406) discussed at length the concept of accreditation and suggested that any process of accreditation should take into account its present resources, future prospects and their relationship to the aspirations, purposes, and goals of the program.

In their accreditation guidebook the Canadian Medical Association (1976:1) stated six purposes of accreditation:

1. To assist in maintaining national standards of allied health education that will assure the competent performance of the graduates;

2. To bring to educational programs a national perspective and to protect them, if necessary, from regional constraints;
3. To provide an "external audit" for educational programs;
4. To encourage program directors to reflect the changing demands of health care in the design of programs for allied health occupations;
5. To promote portability of qualifications for graduates of nationally accredited programs;
6. To offer advice or assistance to new programs during their formative stage.

Anderson, et al. (1975:363) commented that a major contribution of an external evaluation is the different perspective provided by the external evaluator. Further external evaluations are less subjected to direct political and other pressures. A final value of external evaluation, if such an evaluation process is part of a series of evaluations, is that data on different programs is likely analyzed in a similar systematic way permitting interprogram comparison. For these reasons the evaluation reports for each program were considered as an indicator of program effectiveness.

Standards of Excellence

One of the requirements of the Stake model is the development of standards of excellence that can be used as the standard to which the programs may be compared. MacKay and Maguire (1971:26-27) discussed aspects of observed and affective outcomes and the problems of developing instruments which can provide meaningful data on a program of study. One standard of excellence that could be used is the comprehensive examination held at the completion of a program of study. Dressel (1976:237) commented that:

> The comprehensive examination may be viewed as a final assessment in which the student has the opportunity to demonstrate competence to a tribunal of higher authority than the individual teacher.

In medical programs considerable use is made of comprehensive examinations as a method of certification. Although there does appear to be some debate as to the value of comprehensive examinations they do exist as a certifying standard in a number of allied health programs (Dressel, 1976:253, Lynne-Davies, 1972:26-48). Hence for the purpose of this study the standard of excellence was considered to be the national certifying examination for respiratory technologists.

Student Evaluation of a Program

The evaluation of an educational program is a complex task requiring a multiple criteria approach. The indepth analysis required by the rigorous application of the Stake model was recognized however for the purposes of this study the use of student perceptual data on program effectiveness coupled with the accreditation survey reports and national examination results were considered a reasonable approach.

The use of student evaluation has been criticized as only providing a narrow perspective on a course or program. Many faculty members reject the idea that students can or will provide any meaningful contribution to evaluation (Anderson, *et al*., 1975:345). Centra (1973:8) in an assessment of the impact of student ratings on academia commented that student perceptions as a method of evaluation were no less trustworthy than other methods currently available. Recent studies by Frey (1976:327-336) and Gmelch and Glasman (1977: 45-55) both supported the view that students were a reliable data source for information on evaluation and effectiveness. Gmelch and Glasman (1977:45) stated that: "Students, the consumers of teaching, have a unique perspective from which to view effectiveness."

Although the limitations of perceptual data were recognized in Chapter 1 the use of student perceptions as a means of assessing effectiveness was considered useful for the purposes of this study.

The review of literature on program evaluation albeit brief identified that the model developed by Stake (1967) on the process of judging the result of an educational program appeared to have considerable utility for this study. Further three major indicators were identified as being useful for assessment of program effectiveness in this study.

1. First the examination of accreditation reports to provide comparative data.

2. Secondly, the use of the results of the national registration examinations of the Canadian Society of Respiratory Technologists to provide a standard of excellence or measure of productivity.

3. Finally examination of student perceptual data on global effectiveness items to provide a measure of student satisfaction.

The actual methodological approach used to tap the above indicators will be discussed in Chapter 3.

CONCEPTUAL FRAMEWORK

Post-secondary institutions are complex human service organizations which offer a multiplicity of programs organized into functionally differentiated departments. Thompson (1967:25-38) discussed at length the importance of understanding how departmentalization and sub-unit dependency are factors that pose potential problems in terms of sub-unit interdependence, coordination, and resource acquisition. When external organizations are involved the potential problems of interdependence and coordination are usually handled by the development of boundary units[1] specifically mandated to handle interorganizational relationships. Guetzkow (1966:18-22) discussed the importance of boundary units and individual boundary-roles in handling interrelations among organizations and suggested the absence or poor development of such units can affect the functioning of an organization.

Another concept useful to this discussion is the differentiation and integration theory as hypothesized by Lawrence and Lorsch (1969:12-13). They operationally defined differentiation as "differences among members of major subunits in terms of attitudinal and cognitive orientations." Integration was defined as the "perceived state of collaboration between major pairs of subunits." Lawrence and Lorsch (1969) postulated that the greater the differentiation among the sub-units the more difficult it is to bring about integration of effort.

Lawrence and Lorsch (1969:13) explained that there are two aspects of the integration issue: which units are required to work together and how tight is the need for interdependence among them. They postulated that when groups in an organization are highly differentiated, but also require tight integration then the organization must develop more complex integrative mechanisms. There is no reason why this conceptualization cannot be applied to interorganizational relations between two different organizations which require tight integration in order to adequately sustain a joint cooperative program. The complex integrative mechanisms in such a situation would be the linkage dimensions as postulated by Marrett (1971).

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[1] According to Guetzkow (1966:18-22) an organizational boundary unit is a department or segment of an organization that must develop interorganizational relations in order for it to function.

This concept appeared to have some utility for this study because the joint cooperative allied health program can be conceived of as a boundary unit of a post-secondary institution as can the hospital department providing the clinical experience. Each boundary unit has different goals: one is concerned with the education of students while the other is concerned with patient care. Further, each sub-unit operates from a different authority base and has different interpersonal orientation. From this line of reasoning, it was considered reasonable to suggest that two organizational sub-units operating a joint cooperative program are functionally differentiated in the Lawrence and Lorsch sense. Further, as the program is sequential and one component of the program is dependent on the other then integration is very important to the success of the joint cooperative program. Since the two sub-units are subsystems of autonomous organizations then the interorganizational linkages must necessarily affect integration. Further since a basis of comparison for each program was required the effectiveness of each program was investigated following the model developed by Stake (1967) (see Figure 3).

This conceptualization led to the development of the schematic relationships of organizational sub-units, linkage dimensions, integration and program effectiveness (see Figure 3).

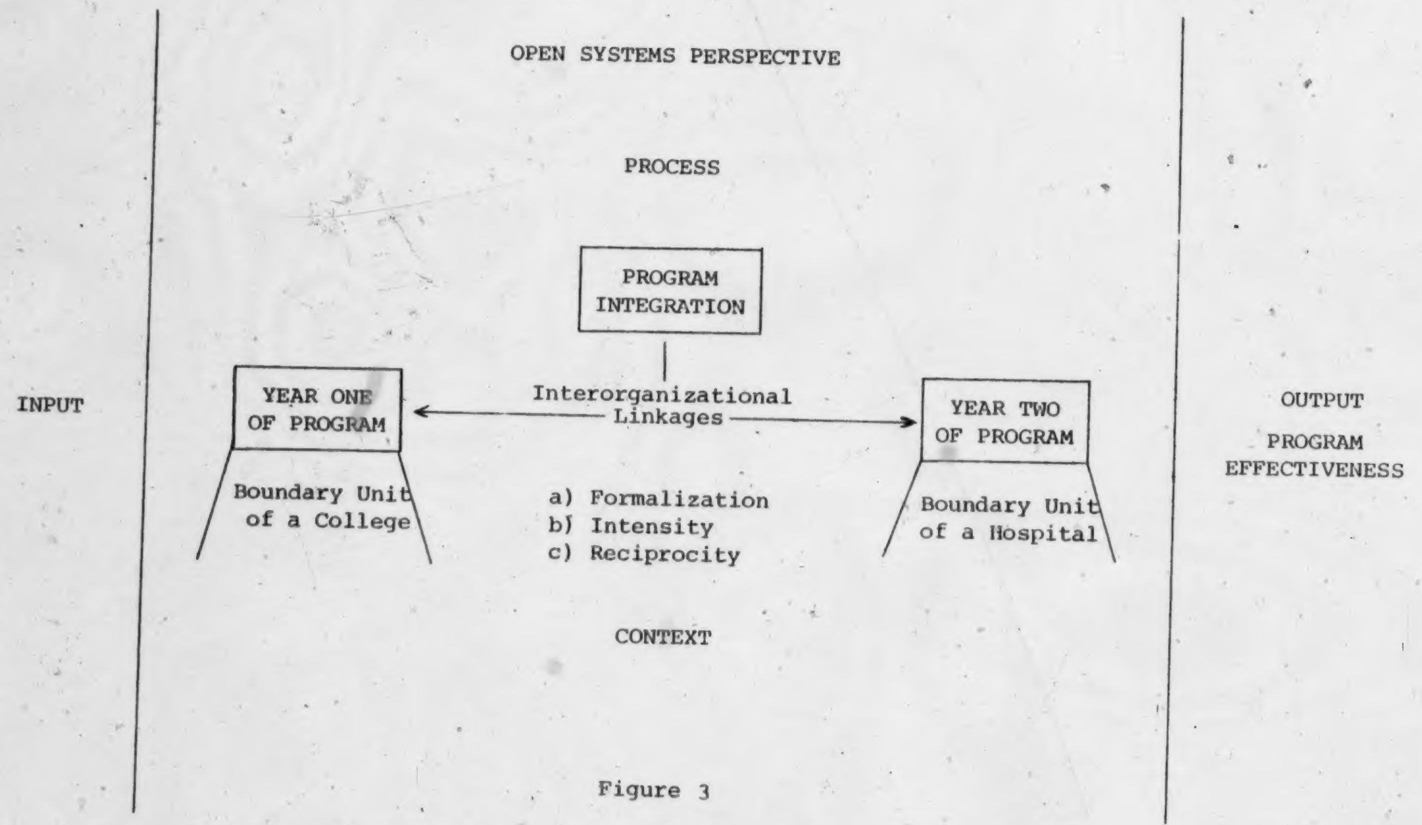
OPEN SYSTEMS PERSPECTIVE
PROCESS
PROGRAM INTEGRATION
INPUT
YEAR ONE OF PROGRAM
Interorganizational Linkages
YEAR TWO OF PROGRAM
OUTPUT
PROGRAM EFFECTIVENESS
Boundary Unit of a College
a) Formalization
b) Intensity
c) Reciprocity
Boundary Unit of a Hospital
CONTEXT

Figure 3

Conceptual Framework of Relationships Between Integration, Subunits and Linkage Dimensions

Hence, the primary focus of this study was the relational level and the specification of variables linking one organization with another. The clear delineation of the linkage mechanisms found in human service organizations should provide a theoretical relationship between the forms of linkage, program integration and effectiveness.

SUMMARY

This chapter developed a conceptual orientation for a description and comparative analysis of the linkage dimensions that join organizations involved in interorganizational relationships.

Open systems theory was described in considerable detail noting that the broader perspective provided by the open systems viewpoint appeared to embrace the dynamic nature of organizations both in terms of their component parts and the external environment. Further the open systems perspective was viewed as the conceptual basis for the study of interorganizational relationships and provided the rationale for the selection of the joint cooperative programs comprising the study sample, and for the use of the perceptual approach to data collection.

In addition, this chapter provided an overview of the theoretical considerations of interorganizational relationships in order to provide a basis for the understanding of the conditions and consequences of such relationships on interorganizational structure, processes and clientele. Issues such as organizational autonomy and the impact of the environment on organizations were identified as being important variables in interorganizational theory. A review of the work by Blishen indicated that joint medical programs were an example of interorganizational relations in which many of the previously mentioned variables could be identified.

This study set out to examine the forms of linkages that join organizations involved in joint cooperative programs in an attempt to see if the relational approach was a meaningful way to study joint cooperative programs. Evidence was found in the literature, theory, and research to support the notion that the linkage dimensions joining organizations were a useful way to study interorganizational relationships. Marrett (1971) provided a conceptual framework for the study of relational dimensions and outlined three important dimensions that provided the basis for this study. The dimensions were:

1. Degree of Formalization of the relationship.
2. Degree of Intensity of the relationship.
3. Degree of Reciprocity of the relationship.

Since it was necessary to compare the findings on linkage dimensions to some meaningful measure a brief review of the literature related to program effectiveness was undertaken and the program evaluation model developed by Stake (1967) was considered appropriate for this study. The highlights of Stake's model included the use of description and judgments as valuable means of assessing the worth of the program.

The final part of this chapter developed a conceptual framework which combined the relational framework posited by Marrett (1971) with the concept of integration developed by Lawrence and Lorsch (1967). It was hypothesized that the clear delineation of the linkage mechanisms found in human service organizations should provide a theoretical relationship between the forms of linkage, program integration and effectiveness.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

This chapter is divided into three sections: (1) research design, (2) instrument development and validation, and (3) the research methodology employed to bring the study to its conclusion.

RESEARCH DESIGN

The Statement of the Problem

The central problems in this study were stated in the form of two questions.

1. To what extent do relationships exist between the forms of linkage, degree of integration, and program effectiveness?
2. To what extent is there an association between the linkage dimensions found in joint cooperative programs?

Sub-problems

Due to the exploratory nature of the study it was decided not to generate any research hypotheses. Although a review of the literature revealed a number of possible patterns that linkage dimensions, degree of integration and effectiveness could assume, the paucity of empirical findings dictated that these variables and their emergent patterns be delineated first prior to developing specific hypotheses. However in order to answer the questions posed in the statement of the problem it was necessary to answer the following sub-problems.

A. Linkage Dimensions

1.0 Formalization

1.1 To what degree was the official sanction for the continuance of the program formalized?

1.2 To what extent were program coordination activities formalized?

1.3 To what extent were program liaison activities clearly delineated?

2.0 Intensity

2.1 What is the frequency of interaction among the program constituents?

2.2 What is the relative resource commitment of the participating institutions?

3.0 Reciprocity

3.1 To what degree are resources mutually exchanged?

3.2 To what degree were the terms of the relationship mutually agreed upon?

B. Degree of Integration

1.0 To what extent does the college contribute to integration?

2.0 To what extent does the hospital contribute to integration?

3.0 To what extent is there mutual or two-way integration among the program constituents?

C. Program Effectiveness

1.0 How effective is the program according to student perceptions?

2.0 How effective is the program according to the Canadian Medical Association evaluation process?

3.0 How well did program graduates do on the 1977 national registration examination of the Canadian Society of Respiratory Technologists?

The Focus of the Study

The particular focus of the study was on the forms of linkage that join a college department to a hospital department involved in a joint cooperative program. An example of a program that utilized the facilities of a college and a hospital was the allied health program respiratory technology. The linkage dimensions were selected as a focus for this study because they represented a class of organizational variables over which most organizations can exert some direct control. A specific joint cooperative program was selected due to the exploratory nature of the study and because there appeared to be merit in exploring the nature and extent of linkage dimensions within a given program rather than attempting to delineate forms of linkages that likely exist throughout the whole organization where interorganizational relations occur.

Research Variables

For the purposes of the study, linkage dimensions and the degree of integration were identified as the primary variables to be examined. Program effectiveness was identified as a secondary variable which warranted investigation to complete the study.

Linkage variables. Based on Marrett's (1971) conceptualization of relational properties there were three primary linkage dimensions in this study: the degree of formalization of the relationship (formalization), the intensity of the relationship (intensity), and the reciprocity of the relationship (reciprocity).

Integration variables. Since the term integration as used in this study was based on the Lawrence and Lorsch (1969:13) definition "perceived state of collaboration between major pairs of subunits" it was decided that three integration variables would be considered. These variables were: college contribution to integration, hospital contribution to integration and two-way (or mutual) integration.

Effectiveness variables. Effectiveness is an extremely complex construct involving many variables hence for the purpose of the study it was decided to record student perceptions on global measures of program effectiveness, examine the accreditation survey reports of the Canadian Medical Association on each program and finally record the student performance of each program on the national registration examination of the Canadian Society of Respiratory Technologists.

Respondents

The faculty respondents in the study were all full time registered Respiratory Technologists engaged in the principal task or tasks related to the instruction of respiratory technology students either at the participating hospitals or the affiliated college or institute of technology. Forty-one faculty members participated in the study.

The student respondents invited to participate in the study were senior respiratory technology students enrolled in each program studied who were about to graduate and were eligible to write the national registration examinations in September, 1977. Sixty-two students completed and returned the questionnaire.

INSTRUMENT SELECTION AND DEVELOPMENT

Two instruments were required for this study in order to measure the respondents' perceptions of program integration and effectiveness. It was decided that the perceptions of all faculty should be recorded on items relating to integration while students would complete a questionnaire combining some integration items and a section on perceived program effectiveness. In order to gather data on linkage dimensions interviews were considered an appropriate method of data collection due to the relatively factual nature of information required.

A search of available instrumentation revealed that no previously validated means of measuring integration in an educational context existed. Numerous instruments were identified that addressed themselves to the issue of program effectiveness but most were considered either too complex or did not readily lend themselves to adaptation for this study. Hence it was decided that new instruments would have to be designed. Initially a pool of items on integration and effectiveness was drafted by the researcher and submitted to a panel of experts for reaction and suggestions for improvement. Once the pool of items had been checked for content validity tentative drafts of the research instruments were developed.

Integration Instrument

For the purposes of this study integration was operationally defined as unity of effort to bring together the college and hospital components of the program into one unified sequential program of study. In order to measure program integration it was necessary to develop a pool of items that examined the degree of intergroup collaboration on issues such as informal instructor mobility, curriculum design, examination preparation, equipment sharing, student intervisitations, and other program related items where intergroup collaboration could occur. Twenty items were initially generated on the following bases: seven items relating to college related integration activities labelled the college contribution dimension, six items relating to hospital related integration activities labelled the hospital contribution dimension, and seven items which were intended to assess two-way integration activities labelled the mutual or two-way integration. Each item was in the form of a question about the different activities that related to integration to which the respondents were requested to circle the most appropriate of five response categories provided under each question. Two basic five-point response scales were developed for the items: one assessing frequency of interaction from never to frequently, the other scale assessing the quality of interaction from very poor to excellent.

A pilot study was conducted in order to check the content validity of the instrument and invite constructive criticism on same by personnel involved in a joint cooperative program similar to Respiratory Technology.

A pilot study population composed of the respondents described in Table 4 was identified from the joint cooperative program Medical Laboratory Technology. This program was considered similar to the Respiratory Technology program insofar as there was no reason to believe

Table 4

Pilot Study Respondents

Affiliated Organization	Faculty Members	Senior Students
Northern Alberta Institute of Technology	10	N/A
Royal Alexandra Hospital	4	11
Charles Camsell Hospital	3	3
University of Alberta Hospital	6	9
Edmonton General Hospital	4	6
Misericordia Hospital	5	12
Total	32	41

that the integration measures of one joint medical program would be substantially different from the integration measures of another joint medical program.

The administration of the Northern Alberta Institute of Technology[1] were approached for permission to conduct a pilot study utilizing the Medical Laboratory Program. Permission was readily granted and contact was made with the Program Head to arrange for details of questionnaire distribution and setting up a schedule of interviews with the hospital clinical coordinators. Questionnaire distribution and interviewing took place during the third week of May, 1977.

Of the 32 faculty and 41 student instruments distributed, 22 faculty instruments (60 percent response) and 30 student questionnaires (73 percent response) were returned. All were considered acceptable for analysis. Six interviews were conducted with the senior program personnel in each participating institution.

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[1] Hereinafter referred to as NAIT.

A detailed analysis of pilot study responses revealed that a number of changes were necessary to both the wording of items and the associated response scale. All comments and suggestions were carefully examined and incorporated in a revised version of the integration instrument. Appendix A includes a copy of the final instrument that was used in the study.

Effectiveness Instrument

For the purposes of this study the Stake (1967) evaluation model was used as the conceptual base to generate indicators of antecedent, transactional and outcome data. Since a variety of data sources were examined on program effectiveness a perceptual measure of global effectiveness was considered adequate for the study. Hence an instrument was developed which tapped broad program areas such as quality of instruction, curriculum relevancy, clinical experiences and other global indicators to which the student could react. Justification for this approach was based in part on the views that program effectiveness is an umbrella concept which is very difficult to measure and probably cannot be dealt with in a simple fashion (Dressel, 1976). A survey of related literature suggested that while program effectiveness is important, writers disagree on what factors are involved and how they should be measured. Mott (1972:27) suggested that in many circumstances a global assessment of effectiveness is a valid and reasonable methodological approach to the measure of effectiveness. The limitations of such an instrument were recognized however the decision was made that a global assessment of program effectiveness was adequate for the purposes of this exploratory study. Eleven items were initially generated on the following bases: two items relating to first year effectiveness, four items relating to second year effectiveness and five items which were intended to assess overall program effectiveness. As in the case of the integration instrument the questionnaire was subjected to a pilot study using the senior students in the Medical Laboratory Program. All pilot study respondents were requested to complete the questionnaire and in addition report any criticisms or suggested revisions that could improve the clarity and understanding of the questionnaire. No major criticisms or suggestions for revisions were forthcoming from the pilot study and hence the original instrument was used in the final study. Appendix B contains a copy of the student program effectiveness instrument.

RELIABILITY AND VALIDITY OF THE INSTRUMENTATION

Since data gathering for many educational research problems is often most appropriately obtained by questionnaire, questions of reliability and validity are essential if meaningful conclusions are to be reached from questionnaire data. Engelhart (1971:151) commented that:

> The characteristics of a test most fundamental to its effectiveness and which is contributed to by all other desirable characteristics is its validity--how well it measures what it is designed to measure . . . . Similarly reliability most simply refers to the consistency with which the scores on a test are related to the scores on the same test given a second time.

Reliability

As stated above an instrument is considered reliable if upon separate administrations it gives consistent results. However the nature of this study and the particular respondents involved posed problems in establishing instrument reliability. A test retest procedure was not considered for this study because the primary purpose of the study was to examine program integration and effectiveness of four programs at a given point in time. If the questionnaires were administered at a later date for the purposes of assessing reliability the opinions of the respondents may have changed because of the commencement of a new academic year with different students, therefore the results obtained from a retest procedure may not have comparable results with the earlier test. Notwithstanding the above observations Engelhart (1971:89) stated:

> While high reliability should be sought, a relatively unreliable test may have adequate reliability for group comparisons. Unreliability is a limitation, but it is a limitation that can be taken into account when interpreting the data.

Validity

Validity as noted by Engelhart (1971) refers to the degree to which a test actually measures what it purports to measure. In other words, do the research instruments in fact possess content validity? A major effort was made in this study to ensure that the instruments developed did in fact deal with the areas with which they were believed to deal.

As reported earlier a pilot study was conducted with a group of respondents that were considered similar to the actual study respondents. Most of the pilot study comments and suggestions were incorporated in the final draft of the instruments. All the items on the final draft were then considered in the light of the purposes of the study and resubmitted to the panel of experts for final comment. It was concluded on the basis of the commentary from the pilot study and panel of experts that the content validity of the instruments used in this study was reasonably established. Finally, an ex-post test of validity was supplied by the questionnaire responses under the section labelled "comments" in that no questions were raised by the respondents that could be regarded as relating to validity.

DATA COLLECTION ON LINKAGE DIMENSIONS

Interviews were considered the most comprehensive method of data collection since the information required on linkage dimensions varied from copies of program documentation to opinion on certain program activities. In order to get a perspective from all the organizations involved, it was deemed necessary to interview the college program head in each program plus the head of the respiratory technology department at affiliated hospitals. At the time of the interview information was gathered to provide a background description of the program as well as data on linkage dimensions. Also, where available, copies of agreements or contracts and other pertinent documentation on the college/hospital relationship were obtained.

Linkage Dimensions

In order to operationally differentiate linkage dimensions from integration indicators, the following structures or activities were considered to be indicators of the linkage dimensions. (See Table 5 for a summary of linkage definitions.)

Table 5

Operational Definitions of Linkage Dimensions

Linkage Dimensions	Explanation
Formalization	
Measurable variables:	
a) Formal agreement--written ... informal	a) The degree to which the exchange is given official sanction
b) Coordination--formal coordinator...informal	b) The extent to which a specified individual coordinates the relationship
c) Procedural standardization--high...low	c) The extent to which procedures are clearly delineated
Intensity	
Measurable variables:	
a) Frequency of interaction--high...low	a) The kind and amount of involvement given the relationship
b) Relative resource commitment--high...low	b) The resource investment (human, funds or services) made by the program participants
Reciprocity	
Measurable variables:	
a) Resource reciprocity--unilateral..none	a) The degree to which resources are mutually exchanged
b) Definitional reciprocity--unilateral...none	b) The degree to which the terms of the interaction are mutually agreed

Formalization. The following structures were considered indicative of the linkage dimension Formalization:

1. Formal contracts, agreements or other written documents that provide the official sanction for the participants in the joint cooperative program.
2. Formal coordination procedures and/or the existence of a program coordinator.
3. A program advisory committee.
4. A college/hospital faculty liaison committee.
5. Standing sub-committees of the above committees, e.g., examination sub-committees.

Intensity. Communication between the program participants was one indicator of the linkage dimension Intensity. In order to differentiate this measure of intensity from measures of integration it was decided this indicator of intensity would be measured in terms of the number of formal liaison committee meetings held each year between the program constituents. The other indicator of the linkage dimension Intensity was the relative human and material resource commitment of the participating organizations made on a regular and planned basis.

Reciprocity. The linkage dimension Reciprocity was indicated by the degree of resource exchange (both human and other) that occurred from one institution to another. Further, the degree to which the terms of the relationship such as written in terms of reference or coordination procedures were mutually agreed upon by the program constituents was considered an indicator of definitional reciprocity.

All the information on linkage dimensions was gathered by interview with the institute program head and the head of the respiratory technology department of the participating hospitals. To ensure a reasonable degree of consistency, an interview guide and coding methodology was developed by the researcher (see Appendices C and D).

SELECTION OF THE SAMPLE

Selection of Programs

Four institutions offering programs of respiratory technology were selected for inclusion in this study. The programs were:

Fanshawe College--London, Ontario, and three affiliated hospitals.

Algonquin College--Ottawa, Ontario, and three affiliated hospitals.

Southern Alberta Institute of Technology (SAIT)--Calgary, Alberta, and three affiliated hospitals.

Northern Alberta Institute of Technology (NAIT)--Edmonton, Alberta and three affiliated hospitals.

The selection of these institutions was made on the basis of four major considerations. First, it was necessary to identify institutions which offered programs of respiratory technology that were divided into two distinct phases; the first year being conducted at the college, the theoretical component, and the second year in the department of respiratory technology of a hospital, the clinical component. All programs included in the sample met these criteria.

Second, the sample was limited to accredited programs. The Canadian Medical Association has developed an accreditation process for a number of allied health programs in Canada; respiratory technology programs are included in that process. All Canadian Medical Association accredited programs have received on-site visitations and inspection from selected members of their organization. The reasons for selecting only accredited programs was in part to provide a measure of control over variables that have obvious impact on educational programs. All accredited programs must have the same basic academic entrance requirements, all instructional staff must be Registered Respiratory Technologists, the curriculum must conform to a national standard, and the general quality of the conjoint program must be acceptable to Canadian Medical Association standards. All programs included in the sample received full accreditation status within the past three years.

A third consideration in the selection of the sample was to select programs representative of at least two provinces. Since the programs of respiratory technology are part of a provincial post-secondary education system some value could be derived from identifying possible differences within the programs between one province and another. The programs selected were located in Ontario and Alberta.

A final consideration in the selection of the sample was to ensure that the programs selected could be considered as having similar environmental contexts. All programs were affiliated with three hospitals, student intake was similar, staff complement was approximately the same and physical facilities were not significantly different. In addition all programs selected were located in cities of less than half a million population, and each program was affiliated with at least one university hospital.

Selection of Respondents

All full time respiratory technology instructional staff and the college coordinator in each institution selected were included in the research population. All hospital personnel designated as instructional staff in the respiratory technology department, the technical director of the department and selected supervisors[1] who had knowledge of the training program were invited to participate. These individuals comprised one major constituent group whose perceptions of program integration were solicited.

The other major constituent group invited to participate in the study were all senior students in the program who were about to graduate. The students were requested to complete a questionnaire that solicited their perceptions on program integration and program effectiveness.

Since the numbers of individuals in the categories referred to above were small, all were included in the study.

RESEARCH METHODOLOGY

Permission to Conduct Research

Permission to conduct the study of the four programs of respiratory technology was secured by contacting the program coordinator at the college involved and the technical director of Respiratory Technology at the affiliated hospitals. All persons contacted responded favorably and times for interviews and instrument dissemination were agreed upon at that time.

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[1] At the time of the on-site visit, the researcher asked the technical director to identify supervisory personnel who were knowledgeable about the program and could respond to the questionnaire on integration.

Data Collection

Program data collection and on-site visitations occurred during June, 1977. The results of the 1977 registration examination were obtained in October 1977, since the examination for those students involved in the study was not written until September 1977. Faculty and student questionnaires (Appendices A and B) were distributed to all full time instructional and supervisory staff and senior students of the program during the on-site visitation. Questionnaires were mailed to those respondents unavailable at the time of the on-site visitation.

Information on linkage dimensions of the joint cooperative program were collected by means of interviews conducted with the college program coordinator and the technical directors of the affiliated hospitals' departments of respiratory technology. Other information was gathered from documents and program related literature.

The majority of the faculty questionnaires were returned directly to the researcher during the on-site visitation. The remainder of the completed questionnaires were returned to the researcher by mail. All respondents were provided with stamped, addressed envelopes to facilitate instrument return and to assure respondents of anonymity.

Prior to leaving each institution involved in the particular program the researcher personally communicated with the senior staff members and requested of them that they encourage their staff to return the questionnaires if they had not already done so.

Data Treatment

Data gathered in the interviews were carefully analyzed and coded in accord with a system developed by the researcher (see Appendix D for complete description of coding system). These data were then treated in two ways. First, a synopsis of the respondents' comments for each program was made and these are provided as Appendices E, F, G and H, and second, a tabular summary was generated using the coding methodology. Fundamentally the coding permitted each linkage variable to be coded on a scale ranging from "1" for a response which represented either the "low" or "few" response categories on up to "5" for the "high" or "many" response categories.

Data from the completed research instruments were coded on data processing cards for analysis. Responses to the personal and demographic variables were coded in accord with the requirements of the computer program. Responses to the integration instrument were coded as follows: "1" for a response which represented either the "very poor" or "never" response categories on up to "5" for the "excellent" or "frequently" response categories. Responses to the program effectiveness instrument were coded as follows: "1" for responses indicating low perceived effectiveness on up to "5" for indicators of high perceived effectiveness.

Frequencies and distribution of responses. The initial analysis involved the determination of the frequencies and percentage distributions of responses on all items from the research instruments using the University of Alberta Division of Educational Research Services (DERS) Statistical Package for the Social Sciences (SPSS) program "Frequencies."

Analysis of personal and demographic variables. The faculty and student data on personal and demographic variables were cross tabulated using the SPSS sub-program "Crosstabs." Due to the relatively low number of respondents in certain cells and the nature of the data gathered, significant differences between groups were sought by means of the chi square test of statistical significance.

Analysis of student and faculty perceptions on integration. Eight program integration items were common to both the faculty and student questionnaires. In order to compare the responses of the two respondent groups on the eight items the DERS program ANOVA 10 (analysis of variance) was used. This program provided information on the difference between means grouped by program using the "*t*-Test." As a result differences in perceived integration between students and faculty could be examined.

Analysis of faculty perceptions on integration. The integration instrument was composed of 24 items which provided the data necessary to compare the degree of integration of each program. Comparative analysis of the four respondent groups was achieved using the DERS program ANOVA 15. This program supplied information on the within-groups variance and the between-groups variance using the "F-test" and the Scheffe multiple comparison of means test. This statistical approach permitted examination of differences in perceived integration between programs.

Analysis of student perceptions of effectiveness. The effectiveness questionnaire consisted of 11 items and was administered to senior students of each program studied. Since comparative data by program were required the same approach as described in the previous section on integration was considered appropriate to identify possible differences in perceived program effectiveness.

Analysis of student performances on the 1977 registration examination. The results of student performance on the 1977 registration examination were obtained from Training Research and Planning Systems Limited of Edmonton who prepared the examination for the Canadian Society of Respiratory Technologists. The data supplied were organized by program providing the scores for each candidate on both aspects of the registration process. The performance of the students for each program was compared using analysis of variance to identify possible differences in performance.

Analysis of findings by program. The research findings generated by the previously described analysis provided the data necessary to compare each program investigated on the research variable linkage, integration, and effectiveness. Due to the nature of the linkage dimension data no statistical treatment was employed. However the linkage data were carefully examined and compared to see if actual differences existed between programs. The other variables were compared using analysis of variance. These treatments permitted the research findings to be analyzed and discussed in relation to the major questions posed at the outset of the study.

SUMMARY

This chapter outlined the research design for the study, the procedures employed in instrument development and subsequent refinement of the instruments used in data collection. The data analysis of linkage dimensions was discussed and the operational definitions presented. The final section of the chapter provided a description of the research methodology and concluded with an explanation of the data treatment.

In the first section on research design, the purpose and focus of the study were stated, the research variables were delineated, faculty and student respondents were identified and the questions to be answered by the study were stated.

The second section of this chapter was directed at the procedures employed in the development of instrumentation used in the study. Since both instruments used were created by the researcher a pilot study was required and the results were presented and discussed.

The data gathering technique for linkage dimensions was explained and operational definitions provided to conceptually differentiate linkage dimensions from integration indicators.

In the final section of this chapter the research methodology was described in detail. The selection of programs and respondents was explained and further information on aspects of the study such as securing permission to conduct the research, the methods of data collection used and the procedures used in data treatment was provided.

The next chapter presents information on the response rate, a profile of the respondents and an analysis of the findings related to the personal and demographic variables.

CHAPTER 4

DESCRIPTION OF THE RESPONDENTS

The purpose of this chapter is to provide a description of the respondents who participated in the study based on the selected personal and demographic variables included in the research instruments. A second purpose of the chapter is to identify any significant differences that might exist between the programs on the variables studied.

The chapter is organized in two sections. The first section provides a summary of the number of questionnaire returns from faculty members and students. The second section presents a description and comparison of the respondents involved in the study.

RESPONSE RATE OF RESPONDENTS

Table 6 presents a summary of responses by program, faculty members, students and total sample. Forty-eight faculty members[1] were asked to respond and 41 questionnaires were returned. All were considered usable. Eighty-seven senior students were asked to participate and 66 returned the questionnaire. Four student questionnaires were not included in the data analysis because of incomplete responses on a majority of the items.

The overall rate of return of usable responses for students was 71 percent. The rate of return for the faculty members was 85 percent. Only one respondent group, the students of Fanshawe College, provided a

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[1] The term "faculty members" refers to personnel of both the college and hospital.

Table 6

Questionnaire Responses by Program, Respondent Group and Total Sample

Program[1]	Respondent Group	Possible Responses	Actual Responses	Percentage Responses
Fanshawe College London, Ontario	Faculty	7	7	100
	Students	18	7	39
Algonquin College Ottawa, Ontario	Faculty	15	12	80
	Students	17	13	76
Southern Alberta Institute of Technology, Calgary	Faculty	13	12	92
	Students	22	19	86
Northern Alberta Institute of Technology, Edmonton	Faculty	13	10	77
	Students	30	23	77
Total	Faculty	48	41	85
	Students	87	62	71

[1] The term "program" includes both the college and hospital components, e.g., "Fanshawe College program" refers to both the theoretical and clinical components.

low percentage of responses. The low return from the students of the Fanshawe College program (39 percent) probably could be attributed to the fact that at the time of the on-site visitation the students had already left for vacation. All questionnaires for this group had to be mailed to addresses provided by the college coordinator. All other respondent groups provided more than 76 percent response.

DESCRIPTION OF THE RESPONDENTS

Data were collected on eight personal and demographic variables for the faculty members, the purpose of which was to describe and group the respondents in this study. Student respondents were asked to provide information on seven personal and demographic variables in order to see if differences in student backgrounds existed among the programs studied. One important personal variable included in the student questionnaire related to previous hospital experience which could affect student performance in the respiratory technology program.

Respondent Characteristics (Faculty)

Data from the completed faculty questionnaires revealed that 31 faculty respondents were male and ten were female. Seventeen of the respondents were under 30 years of age, 14 between 30 and 39, seven between 40 and 49, while only two were over 50. All faculty respondents were registered by the Canadian Society of Respiratory Technologists between 1964 and 1975. (The year of registration of faculty is presented in Table 7.) The reason the data indicates the earliest registration to be 1964 is attributed to the fact that the Canadian Society of Respiratory Technologists was only incorporated in 1964. Prior to 1964 no formal certification process existed for respiratory technologists.

Table 8 presents the school of graduation of faculty respondents. An examination of data from Table 8 shows that a majority of the faculty were trained on the job in a hospital situation. Further analysis reveals that the respiratory technology programs studied tended to hire graduates of their own programs; only two programs had graduates from another centre within their teaching faculty.

The faculty questionnaire requested each respondent to identify his specific position within the program; these data are presented in Table 9. As would be expected the majority of the respondents were

Table 7

Year of Registration for Faculty Respondents

Program	Year of Registration (CSRT)												
	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	Total
Fanshawe College	1						1	2	1	2			7
Algonquin College	1		1	1	1			1	1		3	2	11
SAIT			1		2	2	2	1	2	1		1	12
NAIT	1	1	1	2				1	3			1	10
Total	3	1	3	3	3	2	3	5	7	3	3	4	40[1]

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[1] One respondent did not complete this item.

Table 8

School of Graduation of Faculty Respondents

Program	School of Graduation						
	Halifax	Algonquin College	Fanshawe College	SAIT	NAIT	On the Job Training	Total
Fanshawe College	0	0	5	0	0	2	7
Algonquin College	1	6	0	0	0	5	12
SAIT	0	0	0	5	2	5	12
NAIT	0	0	0	0	5	5	10
Total	1	6	5	5	7	17	41

primarily employed in a hospital as the entire college instructional staff including coordinators only totalled 13. (Ten of the 13 college faculty completed the questionnaire.)

Data concerning years of experience of faculty and the number of years in their current position were tabulated together and presented as Table 10. An analysis of the data in Table 10 shows that 19 of the faculty members have been in their present position two years or less. However the mean years of experience as respiratory technologists for all respondents was 6.5 years.

The final demographic variable investigated in this study was the highest level of education achieved by the respondents. The majority of respondents indicated they had some college education, 25 had at least one college diploma. Twelve respondents had at least one year of university education and five of these had earned at least one university degree. Only three respondents indicated that their highest level of academic achievement was a high school diploma.

One purpose for gathering the personal and demographic data on the faculty respondents was to find out if significant differences existed between the programs on the selected variables. Overall the demographic variables were cross-tabulated by program and subjected to the chi square statistic. This analysis, with one exception, revealed that no significant differences between programs existed at the .05 level on the variables examined. The one exception was the school of graduation of the faculty members of each program. The majority of faculty tended to have graduated from the program that they were teaching in at the time the study was conducted. Hence when the data

Table 9

Breakdown of Faculty Respondents by Position

Program	Total					
	Hospital Instructor	College Instructor	College Program Head	Hospital Department Head	Hospital Supervisor	Total
Fanshawe College	2	1	1	3	0	7
Algonquin College	3	3	1	3	2	12
SAIT	3	2	0	3	4	12
NAIT	3	1	1	3	2	10
Total	11	7	3	12	8	41

Table 10

Years of Experience of Faculty Respondents and Years in Current Position

Program		Years								
		1	2	3	4	5	6	7	8	9 or more
Fanshawe College	Experience	0	0	0	2	1	1	1	1	1
	Current Position	1	3	0	1	1	0	0	0	1
Algonquin College	Experience	0	1	1	2	2	0	0	0	6
	Current Position	2	4	0	0	0	2	0	0	3
SAIT	Experience	0	1	0	1	2	1	2	2	3
	Current Position	3	4	0	1	0	1	2	0	1
NAIT	Experience	0	1	1	0	1	1	1	0	5
	Current Position	2	0	0	2	1	0	0	2	3
Total	Experience	0	3	2	5	6	3	4	3	15
	Current Position	8	11	1	4	1	3	2	2	8

on school of graduation were cross-tabulated by program significant differences were identified. In actuality the differences served to highlight the similarity that each program tended to hire its own graduates. One limitation of these findings rests with the low number of respondents in the Fanshawe College program. The n in that particular program was only seven.

Respondent Characteristics (Students)

Data from the completed student questionnaires revealed that 46 respondents were female, 15 were male, and one student respondent did not indicate sex. The mean age of the respondents was 21.5 years with only five indicating they were over 24 years of age. The oldest respondent was 31 years of age.

Forty-five of the student respondents indicated that they had no hospital experience prior to entering the program. Seven indicated they had one year or less of previous hospital experience while five had two years of experience. Two respondents stated they had five years of previous hospital experience.

Students provided information on the highest level of education achieved. Fifty of the students stated they had completed high school and 12 indicated they had some post-secondary education.

As might be expected with a mean age of 21.5 years 38 students indicated their previous work experience was one year or less. Nine respondents had two years of work experience or less while the balance indicated they had up to five years of work experience.

Each respondent was requested to indicate the highest level of education achieved by each parent. An examination of the data revealed that for a majority of mothers (65.9 percent) the highest level of academic achievement was a high school diploma (or less). Fifty percent of the fathers did not graduate from high school and only 21 percent had received any post-secondary education.

As in the case of the faculty respondents the purpose of collecting and examining information on selected demographic variables was to enable the researcher to ascertain in a very rudimentary way whether or not significant differences existed between programs in the nature of the students enrolled in them. All the demographic variables were cross-tabulated by program and subjected to the chi square statistic. This analysis revealed that no significant differences existed at the .05 level of significance on the variables examined. This finding permitted the researcher to assume that the students in the four programs examined did not differ significantly on the variables examined. Again, the low n in the Fanshawe College program constitutes a limitation in the interpretation of these findings.

SUMMARY

In this chapter the four programs were compared using statistical procedures on the basis of information collected on several faculty and student variables. One limitation of the statistical approach taken was the low number of respondents in the Fanshawe College program. These comparisons with one exception revealed that no significant differences existed at the .05 level on the variables examined. The exception was the school of graduation of faculty and the finding was not unexpected. The majority of faculty members tended to have graduated from the program they were employed in at the time of the study. Hence although statistical differences were found on this variable the differences served to highlight the similarity between programs, in that they tended to hire their own graduates as faculty members.

The next four chapters provide information and analysis for each program studied. The program information provided includes a brief description of the program, a linkage dimension profile, an analysis of the degree of integration and the perceived effectiveness of the program. Comparative analysis of the programs is the major thrust of Chapter 9.

CHAPTER 5

DESCRIPTION AND ANALYSIS OF DATA OF THE FANSHAWE COLLEGE PROGRAM

The focus of this chapter is directed at the analysis of the data gathered by questionnaires and interviews on the Fanshawe College respiratory technology program of London, Ontario. The chapter is divided into four sections. The first section provides a brief description of the program. The second section develops a linkage dimensions profile identified from the interview data. Part three deals with the degree of program integration as perceived by both faculty and students. In the final section an analysis is provided on program effectiveness.

No indepth discussion on the findings is presented in this chapter as the major purpose was to provide an overview of the Fanshawe College program. The information from this chapter then formed the basis for the comparison among the four programs. These appear in Chapters 9 and 10.

DESCRIPTION OF THE PROGRAM

Fanshawe College is located in London, Ontario with satellite campuses located in St. Thomas and Woodstock. The College was established by the Province of Ontario in the mid-sixties and is funded through the Ministry of Colleges and Universities. The College opened its doors in 1967 with an enrollment of 720 full time day students in

20 programs of study. By the 1975-76 academic year the College had established 98 programs in which 11,000 students were enrolled.

One major cluster of programs offered by the College is the health technology and nursing education programs and collectively these programs form the Faculty of Health Sciences. Respiratory Technology is one of the programs offered by the Faculty of Health Sciences.

The Respiratory Technology Program

The Respiratory Technology program was developed in 1968 in conjunction with the St. Joseph's and Victoria Hospitals in London. The program is basically a two year program which follows a curriculum approved by the Canadian Society of Respiratory Technologists and Canadian Medical Association Conjoint Committee on Program Accreditation. The first year is spent at the College in an academic and laboratory setting, the theoretical component, and the second year is spent in the clinical facilities of the affiliated hospitals, the clinical component. There are three full time faculty who teach in the respiratory technology program of Fanshawe College; one is the program coordinator, the other two are staff members; all three are Registered Respiratory Technologists. Two members of the faculty are responsible for the theory taught in the first year while the other faculty member acts as the clinical coordinator. During their second year the students return to the College for one month to complete their theoretical training. Currently the affiliated hospitals include the University Hospital, St. Joseph's Hospital and the Victoria Hospital, all located in London. The students are selected primarily by the College however the hospitals are invited to participate and interview students if they so wish.

During the 1976-77 academic year the students paid tuition fees of $323.00 for two semesters of academic training at the College. Although the student is primarily off campus during the second year, except for one month, the second year tuition fees amounted to $313.00 payable to the College. No stipend was paid by the hospital to the student during his clinical rotation. Upon successful completion of the two year program the student is awarded a Fanshawe College Diploma in Respiratory Technology. Over the past three years the program graduates have been about 80 percent successful on the CSRT national registration examinations.

In order to oversee the program and assist with the integration and cooperation of the organizations involved a program advisory committee exists. The membership of the advisory committee was composed of 13 members from the three participating hospitals plus representation from the college administration and faculty. The program advisory committee did not meet on a regular basis but as required. As of June, 1977 the most recent recorded meeting was held on March 28, 1976.

In addition to the advisory committee there was a College/hospital committee called the Clinical Liaison Committee. The membership of the committee was composed of the hospital department head and clinical instructor from each affiliated hospital, the College program coordinator, the clinical coordinator, and two students from the current classes. The committee met bi-monthly and additional meetings were called by the chairman if deemed necessary.

Additional information on the program is provided in the presentation of the data gathered during the interviews with the three hospital department heads and the College program coordinator. (See Appendix E.)

Linkage Dimensions

As explained in Chapter 3 the primary purpose for interviewing key program personnel from all the participating institutions was to identify how the organizations were linked to each other in accord with the conceptual framework developed in Chapter 2. Since the interview information was extensive a synopsis of the interviews is provided as Appendix E. For the purpose of identifying the linkage dimensions of the program the data were coded in the manner described in Appendix D. This treatment of the data permitted the development of Table 11. A particular pattern of linkage dimensions for the joint cooperative program then emerged. The major purpose for developing the linkage dimension profile was to answer the sub-problems on linkage dimensions outlined at the beginning of Chapter 3, and restated below.

1.0 Formalization

- 1.1 To what degree was the official sanction for the continuance of the program formalized?
- 1.2 To what extent were program coordination activities formalized?
- 1.3 To what extent were program liaison activities clearly delineated?

2.0 Intensity

- 2.1 What is the frequency of interaction among the program constituents?
- 2.2 What is the relative resource commitment of the participating institutions?

Table 11

Profile of Linkage Dimensions Found in the London (Fanshawe College) Program

Linkage Dimension	5[1]	4	3	2	1
A. Formalization of the relationship					
a) Formal agreement (written..informal)				X	
b) Coordination (formal coordinator... informal)	X				
c) Procedural standardization (high...low)					
i) Liaison committee terms of reference	X				
ii) Advisory committee terms of reference					X
iii) Coordination procedures	X				
B. Intensity of the relationship					
a) Frequency of interaction (high...low)					
i) Liaison committee meetings	X				
b) Relative resource commitment (high...low)					
i) College	X				
ii) Hospitals					X
C. Reciprocity of the relationship					
a) Resource reciprocity (high...low)					X
b) Definitional reciprocity (mutual...unilateral)					
i) Liaison committee terms of reference	X				
ii) Advisory committee terms of reference	Not applicable				
iii) Coordination procedures	X				

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[1] Each indicator was rated in accord with a scale that ranged from 5 to 1. The basis for this scale is shown in parentheses following each indicator (e.g., written (5) . . . informal (1).

3.0 Reciprocity

3.1 To what degree are resources mutually exchanged?

3.2 To what degree were the terms of the relationship mutually agreed upon?

Findings

The research findings associated with linkage dimensions are presented in relation to the formalization of the relationship, the intensity of the relationship and the reciprocity of the relationship. The final section presents a discussion of the findings on linkage dimensions in the Fanshawe College program.

Formalization of the relationship. On the research variable "formalization" as measured by the existence of formal contracts or agreements the program appeared to be highly formalized with one of the three affiliated hospitals while the relationship with the other two institutions appeared tacit and informal. Another indicator of formalization was the degree of coordination as measured by the existence of a formal coordinator or written coordination procedures. On this measure the program displayed a high degree of coordination. The formalization indicator of "procedural standardization" also rated high on the five-point scale.

Intensity of the relationship. The second research variable examined was the intensity of the relationship and the two indicators of intensity measured were the frequency of meetings of the Clinical Liaison Committee and the relative resource commitment of the institutions concerned. On the first indicator, the frequency of interaction, the Clinical Liaison Committee with members from all participating institutions met bi-monthly hence the interaction was considered frequent. The second indicator of intensity revealed a different situation. Other than the hospitals allowing the students to use their facilities and interact with their staff, the relative resource commitment of those institutions was low. All funding for the student clinical experiences was provided from the college including salaries for the clinical instructors. In addition to the funding commitment for the clinical experience the college has three full time teaching faculty for the respiratory technology program plus extensive laboratory space and equipment.

Reciprocity of the relationship. The third linkage dimension examined was the reciprocity of the relationship. One indicator of the reciprocity of the relationship was measured by examining the degree to which resources were shared or exchanged by constituents of the program. The interview data indicated that little exchange occurred from the college to hospital and vice versa however the perceived need for such exchange did not appear to be great.

The other measure of reciprocity was definitional reciprocity which examined the degree to which the terms of the interaction were mutually agreed upon. This indicator revealed that where procedures, contracts, or terms of reference did exist the definitional reciprocity measure was found to be high.

Summary of the findings. The three linkage dimensions and their attendant indicators as developed in the conceptual framework were identified in the Fanshawe College respiratory technology program. The data indicated that the linkage dimension of formalization was relatively high and in one case a detailed agreement existed between the college and the University Hospital. However no agreement existed between the college and the other two institutions involved. This finding was considered unusual in that since money is paid to all the participating hospitals why should a contractual agreement only exist with one hospital? The interview with the department head of the University Hospital revealed that such an agreement was required by the University Hospital prior to accepting Fanshawe College students hence the college entered into a contractual agreement at the request of an external agency.

The second linkage dimension of intensity indicated the relationship required considerable interaction among the program constituents however the major resource commitment rests with the college. The final linkage dimension of reciprocity indicated that the degree of exchange was relatively low however the interviewees stated the need for exchange was not great. In contrast the second indicator of reciprocity, definitional reciprocity, was found to be high among the program constituents where formal procedures existed.

Degree of Program Integration

In order to describe the degree of program integration perceptual data were obtained from faculty respondents by means of a 24 item questionnaire designed by the researcher. The questionnaire contained a series of items relating to program activities that were considered to require a high degree of collaboration of effort or interorganizational visitation. The major purpose of the questionnaire was to answer the three integration sub-problems outlined at the beginning of Chapter 3, and restated below, on all four programs studied.

1.0 To what extent does the college contribute to integration?

2.0 To what extent does the hospital contribute to integration?

3.0 To what extent is there mutual or two-way integration among the program constituents?

The data from the Fanshawe College Respiratory Technology Program were tabulated and a brief summary of the findings is presented following each table. At the end of the section on integration a discussion of the findings is presented.

Findings

In order to answer the questions posed above the research findings associated with integration are presented in relation to the college contribution dimension, the hospital contribution dimension, and mutual or two-way integration. Further, a section is included which compares faculty perceptions with student perceptions on eight integration items. The purpose of this endeavor was to provide a validity check on the research instrument. The final section presents a summary of the findings on integration in the Fanshawe College program.

College contribution to integration. Table 12 presents the findings concerning the frequency of the college contribution activities. Four of the six items in Table 11 related to college faculty integration

Table 12

College Contribution Dimension Scores
Frequency Scale--Fanshawe College

Item	Frequency[1] 1	2	3	4	5	n	Mean
In the preparation of final hospital examinations assistance is received from the college instructors	3	2	2	0	0	7	1.85
In the determination of the course content for the hospital portion of the program input is received from the college instructors	1	2	1	3	0	7	2.85
How frequently is equipment provided by the college for the hospital components of the program	0	2	4	1	0	7	2.85
In general, how often do college instructors actively teach in the hospital portion of the program	4	3	0	0	0	7	1.42
How frequently do college instructors visit the hospital on a regular basis for the purpose of gaining clinical experience	1	6	0	0	0	7	1.85
How often are classes held at the college during the clinical year for students of participating hospitals	0[2]	7	0	0	0	7	2.00

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[1] The scale used for these items was: 1 = Never; 2 = Rarely, 3 = Sometimes; 4 = Often, 5 = Frequently.

[2] The scale used for this item was: 1 = Never; 2 = 1 or 2 times per year; 3 = 3-4 times per year; 4 = 5-6 times per year; 5 = 7 or more times per year.

activities. Three of these activities were primarily scored as either a "1" or a "2" on the five-point scale indicating the frequency of college faculty integration activities was perceived to be between "rarely" and "never." College faculty were perceived to "sometimes" contribute to the determination of course content in the clinical year although three of the seven respondents felt the contribution was "often." The item which asked the frequency that equipment is provided by the college to the hospital the model response was "3" on the five-point scale which indicated that the college "sometimes" provided equipment to the hospital. The final item on the frequency scale concerned the use of the college facilities by the senior students in their clinical year. All respondents gave this item a rating of "2" indicating the college facilities were used 1 or 2 times per year by the senior students.

Table 13 presents the questionnaire items related to the perceived quality of the college contribution to integration.

Two of the three items in Table 13 were related to curriculum activities of the first year and asked respondents to rate their quality in terms of relationship and relevancy to the clinical year. The majority of respondents indicated the quality as being either "fair" or "good" on the five-point scale. The last item on the quality scale related to communication from the college to the hospitals and the modal response indicated that the communication was considered "fair."

Hospital contribution to integration. The findings related to the frequency of the hospital contribution activities were tabulated and presented in Table 14.

Table 13

College Contribution Dimension Scores
Quality Scale--Fanshawe College

Item	Quality[1] 1	2	3	4	5	n	Mean
In general, how well does the theoretical knowledge presented in the first year relate to the practical application of that knowledge during the clinical year. Relationship is	0	2	3	2	0	7	3.00
To what extent are the laboratory procedures as taught during the first year relevant to the practical procedures of year two. Relevancy is	0	0	4	3	0	7	3.42
When changes are made to the routines, procedures or equipment in one part of the program (college or hospital) how quickly are these changes communicated to participants in the other part of the program (hospital or college). Speed of communication from college to hospital is	0	1	4	2	0	7	3.14

[1] The scale used for these items was: 1 = Very poor; 2 = Poor, 3 = Fair, 4 = Good, 5 = Excellent.

Table 14

Hospital Contribution Dimension Scores
Frequency Scale--Fanshawe College

Item	Frequency[1]					n	Mean
	1	2	3	4	5		
In the preparation of the final college examinations assistance is received from the hospital instructors	0	3	3	1	0	7	2.71
In the determination of the course content for the college portion of the program input is received from the hospital instructors	0	3	3	1	0	7	2.71
How frequently is equipment provided by the hospital for the college components of the program	2	1	3	1	0	7	2.42
In general, how often do hospital instructors actively teach in the college portion of the program	2	3	2	0	0	7	2.00
How frequently do hospital instructors participate in inservice programs or professional development activities at the college	5	1	1	0	0	7	1.42
In general, how often are hospital visits held during the first year of the program	0[2]	7	0	0	0	7	2.00

[1] The scale used for these items was: 1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often, 5 = Frequently.

[2] The scale used for this item was: 1 = Never; 2 = 1 or 2 times/year; 3 = 3-4 times/year; 4 = 5-6 times/year; 5 = 7 or more times/year.

Four of the six items in Table 14 related to hospital instructor integration activities. Three of these items were rated between "rarely" and "sometimes" on the five-point scale. One item which questioned hospital instructor participation in college in-service or professional development activities was rated between "never" and "rarely" on the five-point scale although the modal response was "never." These findings were not inconsistent with the findings on similar items on the college contribution dimension. As was the case of the college providing equipment to the hospitals the hospitals were also rated as providing equipment to the college somewhere between "rarely" and "sometimes" on the five-point scale. Finally the respondents reported that the hospital facilities were only being used once or twice a year during the first year of the program.

The quality of the hospital contribution activities findings are presented in Table 15. The item related to quality of the hospital visitations that occurred during the first year was rated between "poor" and "fair" on the five-point scale. The other item which was directed at communication from the hospitals to the college was also rated between "poor" and "fair." This finding was identical with the rating given the communication from the college to the hospital.

Mutual (or two-way) integration. As in the case of the previous items on integration the frequency and quality of the mutual integration activities are presented. Table 16 presents the findings on the frequency of mutual integration activities. All three items related to frequency received a mean score of between "3" and "4" on the five-point scale however there was considerable disagreement among the respondents

Table 15

Hospital Contribution Dimension Scores
Quality Scale--Fanshawe College

Item	Quality[1]					n	Mean
	1	2	3	4	5		
During the first year of the program how adequate are the planned hospital visits in reinforcing the theoretical learnings of the first year. Adequacy is	0	3	3	1	0	7	2.71
When changes are made to the routines, procedures or equipment in one part of the program (college or hospital) how quickly are these changes communicated to participants in the other part of the program (hospital or college). Speed of communication from hospital to college is	1	2	2	2	0	7	2.71

[1] The scale used for these items was: 1 = Very Poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

Table 16

Mutual Contribution Dimension Scores
Frequency Scale--Fanshawe College

Item	Frequency[1] 1	2	3	4	5	n	Mean
The college program head and the hospital student coordinator (instructor) communicate (other than at committee meetings)	0	1	1	3	2	7	3.80
College/hospital instructional staff communicate (other than at committee meetings)	0	3	0	2	2	7	3.42
How much consultation is there between the college and hospital staff in the selection of students for the program. Consultation occurs	1	1	2	1	2	7	3.28

[1] The scale used for these items was: 1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often, 5 = Frequently.

as indicated by the spread of responses in Table 16. One item for example has a modal score of "2" however the other four respondents rated the activity as either a "4" or a "5" on the five-point scale.

Table 17 presents the data concerning the quality of the mutual integration activities. The one item on effectiveness of utilization of available resources received a trimodal response with the actual mean score being 2.28. This finding indicated disagreement among the respondents on the effectiveness of the utilization of available resources. The other three items received a modal rating of "fair."

Student responses on program integration. Eight integration items from the faculty questionnaire were included in the student questionnaire to compare faculty and student perceptions on integration. Table 18 presents the responses of both groups and the results of a *t*-Test for differences between the groups. As can be seen from the table the perceptions of faculty and students on the integration items were very similar. Only the last item in Table 18 on overall integration demonstrated a significant difference at the 0.05 level between the groups. This could reflect a different expectation or interpretation on the concept of integration on the part of either faculty or students. These findings indicated that in general the perceptions of the faculty are not significantly dissimilar to those of the senior students.

Summary of findings. The findings from the data were difficult to assess specifically except on an item by item analysis as presented, however, certain generalizations can be drawn from the data. The Fanshawe College Respiratory Technology program appeared to consist of two

Table 17

Mutual Contribution Dimension Scores
Quality Scale--Fanshawe College

Item	Quality[1]					n	Mean
	1	2	3	4	5		
How effective is the present college/hospital relationship in permitting maximum utilization of available resources (people, time, money, etc.) from the various participants of the program. Effectiveness is	2	2	2	1	0	7	2.28
How adequate are the lines of communication between the college and hospital in assisting the overall program to keep current with the latest developments. Adequacy is	0	0	5	2	0	7	3.28
From time to time, program related problems arise which require some kind of joint-problem solving activity. How adequate is the relationship between the college and hospital in coping with program related problems as they arise. Adequacy is	0	2	3	2	0	7	3.00
In general, how would you rate the integration of the hospital and college components of the program. Integration is	0	1	5	1	0	7	3.00

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[1] The scale used for these items was: 1 = Very Poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

Table 18

Comparison Between Faculty and Student Perceptions on Common Integration Items--Fanshawe College

Item	Faculty	Student	Significant Difference
In general, how well did the theoretical knowledge presented in the first year relate to the application of that knowledge during the clinical year	3.00[1]	3.43	N.S.
In general, how often were hospital visits held during the first year of the program	2.00[2]	2.88	N.S.
During your first year of the program how adequate were the planned hospital visits in reinforcing the theoretical learnings of the first year	2.71[1]	2.14	N.S.
How often do college instructors actively teach in the hospital portion of the program	1.14[3]	1.00	N.S.
How often do hospital instructors actively teach in the college portion of the program	2.00[3]	1.57	N.S.
To what extent were the laboratory procedures as taught during the first year relevant to the practical procedures of year two	3.43[1]	3.00	N.S.
How often were classes held at the college during the clinical year for students of the participating hospitals	2.00[2]	2.57	N.S.
In general, how would you rate the college and hospital components of the program	3.00[1]	2.14	0.02

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

[2] The scale used for these items was: 1 = Never; 2 = 1 or 2 times/year; 3 = 3-4 times/year; 4 = 5-6 times/year; 5 = 7 or more times/year.

[3] The scale used for these items was: 1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often, 5 = Frequently.

distinct phases, the theoretical phase at the college and clinical portion at the affiliated hospitals. These phases of the program were physically separate and generally remained separate entities. Little or no faculty intervisitation occurred and students only visited the hospitals once or twice during their first year. However, the second year students did return to the college for one month during their clinical year. Equipment was not shared among the institutions involved unless a specific need could be identified. Another generalization that seemed to emerge from the data was that the cooperation and communication between the constituents of the program appeared to be between "fair" and "good" on the five-point scale although the modal response for the six related items was "fair."

In summary then it would seem that not only was the program operated from a number of physically separate and administratively autonomous organizations but the structure and degree of integration implied that physical integration by way of interagency visitations and resource exchange was minimal or low. The degree of cooperation and communication was fair to good. Of the three integration variables studied the mutual or two-way integration activities appear to be rated higher than either the college contribution to integration or the hospital contribution to integration.

Program Effectiveness

Data on program effectiveness were gathered from three sources, perceptual data from senior students, information from inspection reports of the Canadian Medical Association program accreditation surveys and the results of the 1977 Canadian Society of Respiratory Technologists registration examinations that the senior students of the program wrote in September 1977. The reason for gathering different types of data on program effectiveness was due to the complexity of the subject and the relative unreliability of using only one indicator of program effectiveness.

The major purpose of this section of the chapter is to answer the sub-problems on program effectiveness outlined in the beginning of Chapter 3 and restated below.

1.0 How effective is the program according to student perceptions?

2.0 How effective is the program according to the Canadian Medical Association evaluation process?

3.0 How well did program graduates do in the 1977 national registration examination of the Canadian Society of Respiratory Technologists?

Findings

The research findings associated with program effectiveness are presented in relation to student perceptions of the effectiveness of the first year, the effectiveness of the clinical year and overall indicators of program effectiveness. The second part of this section records pertinent findings from the external evaluation by the Canadian Medical Association and finally the results of the 1977 examination are presented. At the end of this section a summary of the findings is presented.

Student perceptions of program effectiveness.

Perceptual data were gathered from the student respondents by means of an 11 item questionnaire which related to the effectiveness of the first year of the program, the effectiveness of the second year and overall indicators of program effectiveness. Table 19 presents the findings related to first year effectiveness.

The two items related to college effectiveness indicated that the students perceived the theoretical aspect of their training to be "fair." They also rated the relevancy of the laboratory exercises as "3" or "fair" on the five-point scale.

The findings related to second year effectiveness are presented in Table 20.

Three of the four items that purported to measure second year effectiveness all had a modal response of "4" or "good" on the five-point scale. The last item that related to reinforcement of first year learning in the second year had a modal response of "3" or "fair." In general, the student perceptions of the specific items delineated indicated satisfaction with their experiences during the clinical year.

The findings of the overall indicators of program effectiveness are presented as Table 21.

Four of the five items that appeared to be indicators of overall program effectiveness had modal ratings of "3" on the five-point scale although on the item that asked how stimulating the program was received a bimodal response of "3" and "4" on the five-point scale. The other item asked how well the program permitted students to develop trouble shooting skills; three respondents recorded a response of "very poor" and three rated the item "poor."

Canadian Medical Association evaluation. The inspection reports of the Canadian Medical Association accreditation surveys were examined to identify comments or recommendations that were directed toward

Table 19

Student Perceptions of First Year Effectiveness
Fanshawe College

Item	Frequency[1]					n	Mean
	1	2	3	4	5		
How adequate was the college portion of the program in providing you with the theoretical knowledge necessary for the practice of respiratory technology	0	1	3	2	1	7	3.42
How relevant were the first year laboratory exercises in developing operational skills for equipment used in respiratory technology	0	0	4	2	0	6	3.33

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

Table 20

Student Perceptions of Second Year Effectiveness
Fanshawe College

Item	Frequency[1] 1	2	3	4	5	n	Mean
How adequate was the clinical experience in allowing you to develop the skills necessary to practice respiratory technology	0	0	1	5	1	7	4.00
How would you describe the variety of clinical experiences provided during the second year	0	1	1	4	1	7	3.71
In general, how would you rate the clarity of explanation on how clinical experiences are to be carried out	0	0	3	4	0	7	3.57
In general, how well was first year learning reinforced during the second year	1	1	5	0	0	7	2.57

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

Table 21

Student Perceptions of Overall Program Effectiveness--Fanshawe College

Item	Frequency 1	2	3	4	5	n	Mean
In general how would you rate the quality of instruction you received during the total program	1[1]	0	4	2	0	7	3.00
In general how stimulating has the total program been	0[2]	1	3	3	0	7	3.28
From time to time job related problems arise which require trouble shooting skills such as in the case of ventilator failure. How well did the program prepare you to handle such problems	3[1]	3	1	0	0	7	1.71
Would you recommend the program you are experiencing to a close friend or relative if they were interested in pursuing a career in respiratory technology	0[3]	1	4	1	1	7	3.28
In general how would you rate the overall effectiveness of the total two year program	0[1]	0	5	2	0	7	3.28

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

[2] The scale used for this item was: 1 = Boring; 2 = Dull; 3 = Fairly stimulating; 4 = Stimulating; 5 = Very stimulating.

[3] The scale used for this item was: 1 = Not recommend; 2 = Recommend with reservations; 3 = Recommend; 4 = Highly recommend; 5 = Very highly recommend.

linkage dimensions, integration activities and overall program effectiveness.

The Fanshawe College program and affiliated hospitals were first inspected in 1973. At that time Fanshawe College and the theoretical portion of the program was given probationary approval for one year. (Full accreditation status is four years.) The major reasons given for the probationary status were poor coordination; lack of agreement on the role of the technologist; inadequate medical cooperation; and fragmentation between the various components of the program. Two of the three affiliated hospitals received two year approval while the Victoria Hospital was not considered a suitable training locale for students. However since the clinical rotation was needed for the students the accreditation team recommended a one year probationary approval. Numerous recommendations were presented to the program personnel for immediate action. The complete program was reinspected in December of 1975. At that time the program was given full accreditation status with the maximum approval of four years. Unfortunately the Canadian Medical Association was unable to provide a copy of the 1975 accreditation report hence the 1975 recommendations were unavailable for this study. Because the program has been given full accreditation it can only be assumed that the accreditation team was satisfied that the deficiencies identified in 1973 had been remedied.

1977 registration examination results. Twenty graduates of the Fanshawe College program wrote the 1977 examination and all were successful. The examination was composed of two sections the first being a 260 item multiple choice examination and the second a latent image branching logic clinical assessment examination. The national average on the multiple choice examination was 169 with a standard deviation of 21 and the Fanshawe College graduates had a mean score of 178 with a standard deviation of 18. The latent image examination national average was 438 with a standard deviation of 223; the Fanshawe College graduates achieved a mean score of 538 with a standard deviation of 154.

Summary of the findings. The students generally rated the items on the effectiveness instrument as "fair" on the five-point scale. Considering that only seven of the 20 possible respondents returned the questionnaire a surprising diversity of opinion existed among the seven respondents on the 11 items. The one item that asked the students to rate the overall effectiveness of the program received a modal response of "fair" as did the question on recommending the program to a friend. Due to the low number of student respondents some caution should be exercised in the interpretation of these results. It is possible that only the students who had adverse comments on the program returned the questionnaire. This conjecture is not unreasonable in light of the performance of the program graduates on the national examination. It is unfortunate that the 1975 survey report of the Canadian Medical Association was unavailable so that specific program weaknesses (if any were identified) could be correlated with the student assessment of the program. However the 100 percent success on the registration examination, the full accreditation status afforded the program by the Canadian Medical Association, and the "fair" rating given the program by the students would suggest that the Fanshawe College respiratory technology program was effective at the time this study was completed.

SUMMARY

This chapter presented a brief description of the Fanshawe College respiratory technology joint cooperative program, a linkage dimensions profile, the degree of program integration, and information on the effectiveness of the program.

The linkage dimensions profile revealed that, in general, the linkage dimension of formalization was relatively high as indicated by the existence of a detailed contract with one hospital, the existence of a formal coordinator and the degree of specificity of some of the interagency procedures. The second linkage dimension of intensity revealed that the joint cooperative program required considerable interaction among the program constituents, however the major resource commitment rests with the college. The final linkage dimension studied was reciprocity and the degree of exchange among program constituents was found to be relatively low. In contrast, the definitional reciprocity was high where formal procedures existed.

The findings on the degree of program integration revealed that the program involved a number of autonomous organizations each responsible for a given aspect of the joint cooperative program. The physical integration by way of interagency visitations and resource exchanges was found to be low or minimal. The degree of cooperation and communication appeared to range from "fair" to "good." Of the three integration variables studied the mutual or two-way integration activities appeared to be rated higher than either the college contribution to integration or the hospital contribution to integration. Thirteen of the 24 integration items had a modal response of "3" on the five-point scale indicating "fair" or "sometimes" according to the scale used.

The student respondents generally rated the program effectiveness items as "3" on the five-point scale. This finding suggested the students perceived the effectiveness of the program to be generally "fair." However in contrast to this all the respondents and the other graduates who did not return the questionnaire were successful on the 1977 national examination. It was concluded that the Fanshawe College program was effective in preparing its graduates for national certification.

The next chapter presents a similar analysis of the findings of the Algonquin College program located in Ottawa, Ontario.

CHAPTER 6

DESCRIPTION AND ANALYSIS OF DATA OF THE ALGONQUIN COLLEGE PROGRAM

The major thrust of this chapter is directed toward the analysis of the information gathered by interviews and questionnaires on the Algonquin College respiratory technology program located in Ottawa, Ontario. The chapter is organized into four basic sections corresponding with the research variables and their attendant subproblems stated at the beginning of Chapter 3. The first section provides a brief description of the college and related integration activities among the affiliated institutions. The second section develops a linkage dimensions profile on formalization, intensity, and reciprocity from the interview information. Part three deals with the degree of program integration as perceived by both faculty and student respondents and finally a presentation of the findings on program effectiveness completes the chapter.

No indepth discussion on the findings is presented in this chapter as the major purpose was to provide an overview of the Algonquin College program. The information from this chapter then formed the basis for the comparison among the four programs. These appear in Chapter 9. The data also contributed to the generalizing analysis of the findings from the four programs presented in Chapter 10.

DESCRIPTION OF THE PROGRAM

Algonquin College is located in Ottawa, Ontario and has five campuses in the greater Ottawa region and three in the Ottawa Valley. The College was established in 1967 when the Eastern Ontario Institute of Technology and the Ontario Vocational Centre were amalgamated to form the Algonquin College of Applied Arts and Technology. The College is funded through the Ministry of Colleges and Universities.

Algonquin College just celebrated its tenth anniversary, and in 1976 had an enrollment of 12,194 full time students and 29,634 part time students located on eight campuses in the greater Ottawa area.

Algonquin is a bilingual college, and in 1975-76 there were 1,780 francophone students in 45 programs offered in French.

The College is divided into four academic divisions: Business, Technology and Trades, Health Sciences and Continuing Education. While Health Sciences is the youngest division it has a growing number of programs which include the two-year Diploma Nursing Program, and Medical Laboratory Technology and Respiratory Technology which are three-year programs. Dental Assisting, Dental Hygiene, Ambulance and Emergency Care Attendant, Health Records Administration and Pharmacy Assistant (a new program starting September, 1977) complete the programs in Health Sciences.

The Respiratory Technology Program

The Respiratory Technology program was established in 1969 in conjunction with the Ottawa Civic Hospital and the Ottawa General

Hospital. The program was basically a three-year program with the first year being a preparatory year common to all students entering a Health Sciences program. Hence the first year was not an integral part of the respiratory program. The first two years were spent primarily at the college in an academic and laboratory setting. In the second year of the program the students received one day per week clinical experience at the participating hospitals. During the clinical phase of the program the students were rotated through the Ottawa General Hospital, the Ottawa Civic Hospital and the Eastern Ontario Children's Hospital. The students returned to the college for one day per week during their clinical rotation. All students in the program were selected by the college.

The program tuition fees in the 1975-76 academic year were $142.50 per semester. This fee was still payable while the student was in attendance at the hospitals. Upon successful completion of the three year program the student is awarded an Algonquin College Diploma in Respiratory Technology. Over the past three years the program has been about 85 percent successful on the CSRT national registration examinations.

In order to oversee the program and assist with the integration and cooperation of the organizations involved the respiratory technology program had a formally constituted advisory committee which met at least four times a year. Representation on the committee included members from each affiliated hospital--these representatives included the Medical Director and Department Heads of Respiratory Technology departments as well as the Medical Director of the program--the Director of the Allied Health Programs of Algonquin College, the Coordinator, the clinical instructors and students of the respiratory technology program.

In addition there was a formally constituted Clinical Liaison Committee which met on a monthly basis to discuss any problems that should be resolved cooperatively as well as discuss program and related clinical activities that might require change. The membership of the Clinical Liaison Committee consisted of the Director of the Allied Health Section, the program Coordinator, clinical instructors and current students of the program.

Additional information on the program is provided in the presentation of the data gathered during the interviews with two hospital department heads and the college program coordinator (see Appendix F).

Linkage Dimensions

As explained in Chapter 3 the purpose for interviewing key program personnel from the participating organizations was to examine how the institutions were linked in accord with the conceptual framework developed in Chapter 2. Since the data gathered by interview were extensive a synopsis of the interviews is provided as Appendix F. In order that the data gathered by interview could be analyzed in terms of linkage dimensions the data were coded in the manner described in Appendix D. This methodology of data analysis permitted the generation of Table 22. A particular pattern of linkage dimensions for the joint cooperative program then emerged. The purpose of developing a linkage profile was to answer the following sub-problems on linkage dimensions.

1.0 Formalization

1.1 To what degree was the official sanction for the continuance of the program formalized?

Table 22

Summary of Linkage Dimensions Found in the Ottawa (Algonquin College) Program

Linkage Dimension	5[1]	4	3	2	1
A. Formalization of the relationship					
a) Formal agreement (written...informal)	X				
b) Coordination (formal coordinator... informal)	X				
c) Procedural standardization (high...low)					
i) Liaison committee terms of reference	X				
ii) Advisory committee terms of reference	X				
iii) Coordination procedures	X				
B. Intensity of the relationship					
a) Frequency of interaction (high...low)					
i) Liaison committee meetings	X				
b) Relative resource commitment (high...low)					
i) College	X				
ii) Hospitals					X
C. Reciprocity of the relationship					
a) Resource reciprocity (high...low)					X
b) Definitional reciprocity (mutual...unilateral)					
i) Liaison committee terms of reference					X
ii) Advisory committee terms of reference					X
iii) Coordination procedures	X				

[1] Each indicator was rated in accord with a scale that ranged from 5 to 1. The basis for this scale is shown in parentheses following each indicator (e.g., written (5)...informal (1)).

1.2 To what extent were program coordination activities formalized?

1.3 To what extent were program liaison activities clearly delineated?

2.0 Intensity

2.1 What is the frequency of interaction among the program constituents?

2.2 What is the relative resource commitment of the participating institutions?

3.0 Reciprocity

3.1 To what degree are resources mutually exchanged?

3.2 To what degree were the terms of the relationship mutually agreed upon?

Findings

The research findings related to linkage dimensions are presented in relation to the formalization, intensity and reciprocity of the relationship. The final section presents a summary of the findings on linkage dimensions in the Algonquin College program.

Degree of formalization. On the linkage dimension "formalization" as measured by the existence of formal contracts or agreements the program appeared highly formalized with contractual agreements in existence with each affiliated clinical facility. Another indicator of the degree of formalization was the degree of coordination as measured by the existence of a formal coordinator or written coordination procedures. This particular indicator also demonstrated that the program is highly formalized. The third indicator of formalization examined was the degree of procedural standardization of the program. As mentioned earlier the program was very well documented and hence the procedural standardization was considered high on the five-point coding scale.

Intensity of the relationship. The second linkage dimension examined was the intensity of the relationship and the two indicators of intensity were the frequency of interaction and relative resource commitment of the organizations involved in the joint cooperative program. On the first indicator, the frequency of interaction, as measured by the frequency of formal meetings of the clinical liaison committee, the program rated high on the five-point scale since the committee held regular monthly meetings. The second indicator of intensity, the relative resource commitment, revealed a different situation. Although the hospitals allowed the students to use their facilities, interact with their staff, and participate in patient care, the relative resource commitment in terms of purchasing special items of equipment for teaching purposes and direct monetary expenditures for educational related purposes was almost zero. All funding for the student clinical experiences was provided from the college including salaries for the clinical instructors. Further to funding the clinical experience the college has three full time teaching faculty for the respiratory technology program plus extensive laboratory space and equipment.

Reciprocity of the relationship. The third research variable examined was the reciprocity of the relationship. One indicator of the reciprocity of the relationship was measured by examining the degree to which resources were shared or exchanged by the constituents of the program. The actual exchange of resources on a regular and systematic basis was low however the interviewees stated that if a need arose then the institutions would readily share or exchange a given resource.

The second measure of reciprocity was definitional reciprocity which examined the degree to which the terms of the interaction were mutually agreed upon. This indicator revealed that most of the coordination procedures and committee terms of reference were prepared by the college. The only exception to this finding was the clinical experience contract which was mutually agreed to by the parties involved although again the original document was drafted by the college. The interviewees all stated that unless a specific procedure or agreement encroached upon a specific hospital policy or affected patient care then it was expected that the college would do all the necessary document preparation.

Summary of the findings. The three linkage dimensions of formalization, intensity and reciprocity were able to be identified in the Algonquin College Respiratory Technology Program. The data revealed that the degree of formalization was high in this particular program. The second linkage dimension of intensity revealed that there was considerable interaction of the program participants on a regular and planned basis, however, the major resource commitment rests with the college. The last linkage dimension studied was reciprocity and the indicators suggested the degree of exchange of resources was relatively low. This particular indicator was difficult to assess in all four of the programs studied. It would appear that the reason for this could be due to the nature of the respiratory technology program and the rather delicate and bulky equipment used in this particular allied health profession. Also the hospital equipment and staff are primarily employed to provide patient care and cannot be readily deployed to another institution. The final measure examined was definitional reciprocity and the data revealed that the college did the major preparation of program documentation. This finding was not surprising when the relative resource commitment of the college was also found to be high.

An overview of the linkage dimensions of the Algonquin College program indicates that the college is responsible for the total program and contracts both clinical space and instructional staff with the participating hospitals. Since the college is the funding agency it would appear reasonable to expect the linkage dimensions to be characterized by high formalization, high resource commitment and low or unilateral definitional reciprocity on behalf of the college. It is clear that the hospitals are willing to participate in such an arrangement as indicated by their high frequency of interaction. These linkage dimension findings are not dissimilar to Marrett's (1971) conceptualization of an intense cooperative program characterized by high formalization, standardization, and intensity. This finding will be elaborated upon later in Chapter 10.

Degree of Program Integration

In order to describe the degree of program integration of the Algonquin College program perceptual data were gathered by a questionnaire previously described. The major purpose of the integration questionnaire was to answer the three sub-problems outlined at the beginning of Chapter 3 and restated below.

1.0 To what extent does the college contribute to integration?

2.0 To what extent does the hospital contribute to integration?

3.0 To what extent is there mutual or two-way integration among the program constituents?

The data from the Algonquin College program were tabulated and a brief summary of the findings is presented at the end of each table.

Findings

The research findings associated with program integration are presented in relation to the college contribution dimension, the hospital contribution dimension and mutual or two-way integration. A comparison of faculty and student respondents on selected integration items is also included as a check on the validity of the instrument. At the end of the section on integration a summary of findings is presented.

College contribution to integration. Table 23 presents the findings concerning the college contribution dimension-frequency scale. Three of the four items in Table 23 that related to college instructor integration activities had a modal score of "1" indicating that college instructors were "never" involved in those particular activities. However on the item that addressed the issue of college instructor input to the determination of the clinical course content considerable disagreement among the respondents can be noted. Four respondents answered "1" while five recorded a score of "4" on the five-point scale. On the item concerned with the frequency that equipment was supplied by the college to the hospitals the most frequently reported score was "never." The final item on the frequency scale asked the frequency that

Table 23

College Contribution Dimension Scores Frequency Scale--Algonquin College

Item	Frequency[1] 1	2	3	4	5	n	Mean
In the preparation of final hospital examinations assistance is received from the college instructors	6	4	0	1	1	12	1.91
In the determination of the course content for the hospital portion of the program input is received from the college instructors	4	1	2	5	0	12	2.66
How frequently is equipment provided by the college for the hospital components of the program	7	2	2	1	0	12	1.75
In general, how often do college instructors actively teach in the hospital portion of the program	7	3	0	1	0	11	1.54
How frequently do college instructors visit the hospital on a regular basis for the purpose of gaining clinical experience	6	3	1	0	1	11	1.81
How often are classes held at the college during the clinical year for students of participating hospitals	0[2]	0	0	0	11	11	5.00

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[1] The scale used for these items was: 1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often, 5 = Frequently.

[2] The scale used for this item was: 1 = Never; 2 = 1 or 2 times/year; 3 = 3-4 times/year; 4 = 5-6 times/year; 5 = 7 or more times/year.

classes were held at the college during the clinical year and all respondents recorded a "5" on the questionnaire.

The questionnaire findings on the perceived quality of the college contribution activities are presented in Table 24. Two of the three items in this table were concerned with curriculum activities of the college portion of the program in order to determine the relevancy and applicability of those items to the clinical experience. On both items the modal score was "fair" on the five-point scale however in each case four respondents also rated the items as "good." The last item on the quality scale concerned the rapidity that changes are communicated from the college to the hospitals. Some disagreement among the respondents can be noted on this item as three reported a score of "poor", four recorded "fair" and three rated the item as "good."

Hospital contribution to integration. The findings concerning the frequency of the hospital contribution activities were tabulated and presented as Table 25. Four of the six items in this table related to hospital instructors integration activities. Two of the activities delineated had a modal response of "never." Both of the similar items on the college instructor dimension were also rated as "never" suggesting that examination preparation is the responsibility of the institution giving a specific component of the program. Also college and hospital instructors would appear to only instruct at their own institutions.

In the determination of the course content provided by the college the clinical instructors were perceived as having "good" input by five respondents while three felt the input was only "fair." When contrasted with the similar item on the college contribution to

Table 24

College Contribution Dimension Scores
Quality Scale--Algonquin College

Item	Quality[1] 1	2	3	4	5	n	Mean
In general, how well does the theoretical knowledge presented in the first year relate to the practical application of that knowledge during the clinical year. Relationship is	1	0	7	4	0	12	3.16
To what extent are the laboratory procedures as taught during the first year relevant to the practical procedures of year two. Relevancy is	0	0	6	4	1	11	3.54
When changes are made to the routines, procedures or equipment in one part of the program (college or hospital) how quickly are these changes communicated to participants in the other part of the program (hospital or college). Speed of communication from college to hospital is	0	3	4	3	1	11	3.18

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

Table 25

Hospital Contribution Dimension Scores
Frequency Scale--Algonquin College

Item	Frequency[1]					n	Mean
	1	2	3	4	5		
In the preparation of the final college examinations assistance is received from the hospital instructors	8	0	1	1	2	12	2.08
In the determination of the course content for the college portion of the program input is received from the hospital instructors	1	0	3	5	1	10	3.50
How frequently is equipment provided by the hospital for the college components of the program	1	4	4	1	2	12	2.91
In general, how often do hospital instructors actively teach in the college portion of the program	7	2	1	0	1	11	1.72
How frequently do hospital instructors participate in inservice programs or professional development activities at the college	4	3	4	0	0	11	2.00
In general, how often are hospital visits held during the first year of the program	1[2]	3	1	3	4	12	3.50

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[1] The scale used for these items was: 1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often; 5 = Frequently.

[2] The scale used for this item was: 1 = Never; 2 = 1 or 2 times/year; 3 = 3-4 times/year; 4 = 5-6 times/year; 5 = 7 or more times/year.

integration table it would appear that in general instructors from both the college and the clinical setting do get together to determine the overall course content however differing opinions appear to exist among the respondents as to the quality of the interaction. The final item concerning hospital instructors related to participating in college professional development activities. This item had a bimodal response with eight respondents rating the frequency of the activity as either "never" or "sometimes" on the five-point scale. The overall mean for this item was "rarely."

The frequency that hospitals provided equipment to the college also resulted in a bimodal response of "rarely" and "sometimes" however two respondents recorded "frequently" or "5" on the five-point scale. It should be remembered in the interpretation of this finding that since three hospitals were involved in the program it could be possible that one hospital contributed or loaned more equipment to the college than did the other participating hospitals.

The final activity on this scale concerned the frequency of hospital visits during the first year of the program. As can be seen from the table all response categories were marked by at least on respondent with the modal score being "5" or "frequently" and the mean between "sometimes" and "often."

Table 26 presents the findings related to the perceived quality of the hospital contribution activity. The adequacy of the planned hospital visits during the first year of the program was rated as "fair" by the majority of respondents even though there appeared to be considerable disagreement on the frequency of the visits. The second item on the

Table 26

Hospital Contribution Dimension Scores
Quality Scale--Algonquin College

Item	Quality[1]					n	Mean
	1	2	3	4	5		
During the first year of the program how adequate are the planned hospital visits in reinforcing the theoretical learnings of the first year. Adequacy is	0	1	6	2	0	9	3.11
When changes are made to the routines, procedures or equipment in one part of the program (college or hospital) how quickly are these changes communicated to participants in the other part of the program (hospital or college). Speed of communication from hospital to college is	0	3	3	3	2	11	3.36

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

quality scale was concerned with speed of communication from the hospital to the college. This item had a trimodal response from "poor" to "good" with the mean being 3.36 or just above "fair" on the actual rating scale. Due to the trimodal response the questionnaires were re-examined to see if the differences of opinion were related to the institution of employment of the respondent. This investigation revealed that the college instructors were also equally divided on their response to this item as were the hospital employed respondents.

Mutual or two-way integration. This section is organized in the same manner as the previous dimensions with Table 27 presenting the findings on the frequency of mutual or two-way integration activities.

Two of the three items in the table were concerned with the frequency of communication between the two levels of program personnel and both were rated as either a "3" or a "4" on the five-point scale. Communication was rated higher between the program coordinator and the hospital instructors than between college/hospital instructional staff. As far as the degree of consultation on student selection was concerned seven respondents answered "5" or "frequently" on the five-point scale. However two respondents suggested the frequency was "never."

Table 28 presents the data concerning the quality of the mutual integration activities. Three of the four items in this scale received a modal score of "4" or "good" on the five-point scale. The last item which was considered to be an overall indicator of program integration was perceived by five respondents as being "fair" while four respondents indicated the integration was "good."

Table 27

Mutual Contribution Dimension Scores
Frequency Scale--Algonquin College

Item	Frequency[1] 1	2	3	4	5	n	Mean
The college program head and the hospital student coordinator (instructor) communicate (other than at committee meetings)	1	1	4	4	1	11	3.27
College/hospital instructional staff communicate (other than at committee meetings)	1	1	5	3	1	11	3.18
How much consultation is there between the college and hospital staff in the selection of students for the program. Consultation occurs	2	2	0	1	7	12	3.75

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[1] The scale used for these items was: 1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often; 5 = Frequently.

Table 28

Mutual Contribution Dimension Scores
Quality Scale--Algonquin College

Item	Quality[1]					n	Mean
	1	2	3	4	5		
How effective is the present college/hospital relationship in permitting maximum utilization of available resources (people, time, money, etc.) from the various participants of the program. Effectiveness is	0	3	2	7	0	12	3.33
How adequate are the lines of communication between the college and hospital in assisting the overall program to keep current with the latest developments. Adequacy is	0	1	2	6	2	11	3.81
From time to time, program related problems arise which require some kind of joint-problem solving activity. How adequate is the relationship between the college and hospital in coping with program related problems as they arise. Adequacy is	0	0	1	5	4	10	4.30
In general, how would you rate the integration of the hospital and college components of the program. Integration is	0	1	5	4	1	11	3.45

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[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

Student responses on program integration. The student questionnaire contained eight integration items from the faculty questionnaire in order to compare faculty and student perceptions on integration. Table 29 presents the faculty and student responses on the eight common items and the results of a "t-Test" for identifying differences between groups. The tabulated data indicated the perceptions of the faculty members and students on the integration items were very similar.

Only item six in table 29 on the adequacy of planned hospital visits demonstrated a significant difference at the 0.05 level between the groups. This difference could likely be explained by a different perception of the term "adequacy" as it related to hospital visits. The faculty could have perceived the item to be concerned with the number of visits while students viewed hospital visits in terms of the value to them as individuals. Overall these findings suggest the perceptions of faculty and students werenot significantly different.

Summary of findings. The findings from the data were difficult to assess except by an item by item analysis as presented however certain generalizations can be drawn from the data. The Algonquin College Respiratory Technology program has two clearly identifiable phases of training, the theoretical phase at the college and the clinical portion at the affiliated hospitals. Within that structure there was little or no exchange of instructional staff between the institutions involved.

The students had considerable opportunity for interagency visitation commencing during their first year and culminating with a four day per week clinical exposure during their final year. Further although majority of the time in the final year was at the hospitals

Table 29

Comparison Between Faculty and Student Perceptions on Common Integration Items--Algonquin College

Item	Faculty	Student	Significant Difference
In general, how well did the theoretical knowledge presented in the first year relate to the application of that knowledge during the clinical year	3.17[1]	3.31	N.S.
In general, how often were hospital visits held during the first year of the program	3.50[2]	3.54	N.S.
During your first year of the program how adequate were the planned hospital visits in reinforcing the theoretical learnings of the first year	3.11[1]	2.17	0.03
How often do college instructors actively teach in the hospital portion of the program	1.63[3]	1.00	N.S.
How often do hospital instructors actively teach in the college portion of the program	1.73[3]	1.15	N.S.
To what extent were the laboratory procedures as taught during the first year relevant to the practical procedures of year two	3.55[1]	2.92	N.S.
How often were classes held at the college during the clinical year for students of participating hospitals	5.00[2]	4.92	N.S.
In general, how would you rate the college and hospital components of the program	3.45[1]	3.23	N.S.

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

[2] The scale used for these items was: 1 = Never; 2 = 1 or 2 times/year; 3 = 3-4 times/year; 4 = 5-6 times/year; 5 = 7 or more times/year.

[3] The scale used for these items was: 1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often; 5 = Frequently.

they returned to the college for one day per week. Equipment and facilities were perceived to be generally well shared with the exception that the college does not appear to provide or loan equipment to the hospitals.

The final finding from the data was that the cooperation and communication among the program constituents was perceived of as generally good. The major communication network would appear to be the Clinical Liaison Committee which met regularly and dealt with issues such as student selection and curriculum content.

In summary, then, although the program operated from a number of physically separate and administratively autonomous organizations, the degree of integration would appear to be medium to high. The only area that integration was consistently rated less than three on the five-point scale was tasks that required instructors to teach or participate in activities at another institution. The resource exchange was good as was the degree of cooperation and communication. Of the three integration variables studied the mutual or two-way integration activities appear to be rated marginally higher than either the college contribution to integration or the hospital contribution to integration.

Program Effectiveness

Data on program effectiveness were gathered from three sources, perceptual data from senior students, information from the inspection reports of the Canadian Medical Association accreditation committee, and the results of 1977 national registration examinations of the Canadian Society of Respiratory Technologists written by the senior students of the program in September 1977.

The major purpose of this section is to answer the sub-problems outlined in Chapter 3 and restated below.

1.0 How effective is the program according to student perceptions?

2.0 How effective is the program according to the Canadian Medical Association evaluation process?

3.0 How well did program graduates do in the 1977 national registration examination of the Canadian Society of Respiratory Technologists?

Findings

Program effectiveness findings are presented in relation to student perceptions, pertinent information from the external evaluation by the Canadian Medical Association and finally the results of the 1977 registration examinations. At the end of the section a summary of the findings is presented.

Student perceptions of program effectiveness. Perceptual data were gathered from senior students on an 11 item questionnaire which included indicators of first year effectiveness, second year effectiveness and overall program effectiveness. Table 30 presents the findings related to first year effectiveness. The two items on the questionnaire that related to the first year of the program were concerned with the theoretical and laboratory components of the curriculum. Eight of 13 respondents perceived the theoretical aspect of their training to be "good" while the relevancy of the laboratory exercises was rated as "3" or "fair" on the five-point scale.

The findings related to second year effectiveness are presented in Table 31. All four items that were designed as indicators of clinical effectiveness had a modal response of "4" or "good" on the five-point

Table 30

Student Perceptions of First Year Effectiveness
Algonquin College

Item	Frequency[1] 1	2	3	4	5	n	Mean
How adequate was the college portion of the program in providing you with the theoretical knowledge necessary for the practice of respiratory technology	0	1	3	8	1	13	3.69
How relevant were the first year laboratory exercises in developing operational skills for equipment used in respiratory technology	0	3	6	4	0	13	3.07

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

Table 31

Student Perceptions of Second Year Effectiveness
Algonquin College

Item	Frequency[1] 1	2	3	4	5	n	Mean
How adequate was the clinical experience in allowing you to develop the skills necessary to practice respiratory technology	0	0	1	8	4	13	4.23
How would you describe the variety of clinical experiences provided during the year	0	2	2	5	4	13	3.84
In general, how would you rate the clarity of explanation on how clinical experiences are to be carried out	0	3	4	6	0	13	3.23
In general, how well was first year learning reinforced during the second year	0	1	3	8	1	13	3.69

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

scale. There was however some disagreement on the item that asked for a rating on the clarity of explanation on how clinical experiences are to be carried out in that three respondents rated the explanations as "poor" while four rated it as "fair." In general the students indicated satisfaction with their clinical experiences.

Table 32 presents the findings related to overall program effectiveness. Three of the five items that were considered indicators of overall program effectiveness had a modal response of "4" on the five-point scale although considerable diversity of opinion on one item related to trouble shooting skills can be noted in that the mean score was 2.61 even though the mode was 4.00. Eleven of 13 respondents indicated they would "highly recommend" the program to a friend or relative and 10 of 12 respondents indicated the overall effectiveness was "4" or good on the five-point scale. The program was considered "fairly stimulating" by majority of the respondents and the quality of instruction of the total program was perceived of as "fair." In general, the students rated the indicators of overall program effectiveness as either a "3" or "4" on the five-point scale suggesting that the program had a "fair" to "good" degree of effectiveness in their perception.

Canadian Medical Association evaluation. The on-site survey reports of the Canadian Medical Association accreditation were examined to identify specific comments or recommendations that concerned linkage dimensions, integration activities and overall program effectiveness.

The Algonquin College program and affiliated hospitals were first inspected in 1973. At that time the two affiliated hospitals

Table 32

Student Perceptions of Overall Program Effectiveness--Algonquin College

Item	Frequency					n	Mean
	1	2	3	4	5		
In general how would you rate the quality of instruction you received during the total program	0[1]	2	7	4	0	13	3.15
In general how stimulating has the total program been	0[2]	1	9	3	0	13	3.15
From time to time job related problems arise which require trouble shooting skills such as in the case of ventilator failure. How well did the program prepare you to handle such problems	3[1]	3	3	4	0	13	2.61
Would you recommend the program you are experiencing to a close friend or relative if they were interested in pursuing a career in respiratory technology	0[3]	0	2	11	0	13	3.84
In general how would you rate the overall effectiveness of the total two year program	0[1]	1	1	10	0	12	3.75

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

[2] The scale used for this item was: 1 = Boring; 2 = Dull; 3 = Fairly stimulating; 4 = Stimulating; 5 = Very stimulating.

[3] The scale used for this item was: 1 = Not recommend; 2 = Recommend with reservations; 3 = Recommend; 4 = Highly recommend; 5 = Very highly recommend.

were the Ottawa Civic and the Ottawa General Hospitals. The two hospitals were given a two year probationary approval while the college was given one year approval. (Full accreditation status is four years.) The major reasons given for the one year approval were the lack of medical input into the program, lack of a planned integrated educational experience during the clinical year, poor utilization of available resources, absence of coordination of the clinical year, and subjective evaluation of clinical skills of senior students. The complete program was reassessed in June 1976 and in the opinion of the survey team the major shortcomings identified above had been rectified although some concern was still noted on the amount of physician instruction at the college. The survey team commented that the program had an enthusiastic, capable staff, strong administrative support, continuing evaluation procedures, a willingness to implement change, good student loyalty and participation, and finally good communication and coordination with the clinical portion of the program. The total program was given full accreditation status for a maximum of four years.

1977 registration examination results. Seventeen graduates of the Algonquin College program wrote the 1977 registration examination and 15 were successful. The examination was composed of two sections the first being a 260 item multiple choice examination and the second a latent image branching logic clinical assessment examination. The Algonquin College graduates had a mean of 181 with a standard deviation of 21 on the multiple choice examination compared with the national average of 169 with a standard deviation of 21. The latent image examination national average was 438 with a standard deviation of 223; the Algonquin College graduates achieved a mean score of 581 with a standard deviation of 228.

Summary of the findings. The students of the Algonquin College program generally rated the items on the effectiveness instrument between "fair" and "good" on the five-point scale. One item on the questionnaire requested the respondents to rate the overall effectiveness of the program and ten of the 12 respondents answered "4" or "good" on the five-point scale. Another global indicator of program effectiveness was the item that questioned the degree to which the respondent would recommend the program to a friend of relative. Eleven of the 13 respondents answered "4" or "would highly recommend."

Consonant with the student reaction to the program, the Canadian Medical Association survey team indicated their approval of the program awarding it full accreditation status. Comment was made on the great improvement demonstrated in all aspects of the program at the time of survey (1976) especially the degree of program documentation and coordination of clinical experiences.

The final area examined was the results of the 1977 registration examination and the program graduates performed well on that evaluative process with only two students failing to be certified. The examination performance of the Algonquin College graduates was the highest of the four programs studied on both aspects of the examination.

The above cited findings suggest that the Algonquin College respiratory technology program was very effective at the time this study was completed.

SUMMARY

This chapter presented a brief description of the Algonquin College respiratory technology program, a linkage dimensions profile, the degree of program integration, and the findings related to program effectiveness.

The linkage dimensions profile of the Algonquin program indicated that the formalization of the relationship among the participating organizations was high. Written agreements, a formal coordinator and numerous written procedures on interagency activities characterized the program. The second linkage dimension of intensity indicated that the joint program required considerable interaction among the program constituents however the major resource commitment rests with the college. The third linkage dimension studied was the reciprocity of the relationship. The degree of exchange of resources among the organizations was found to be low. A second indicator of reciprocity was definitional reciprocity and the findings indicated that the college originated most documents related to interagency activities, hence the definitional reciprocity was low or unilateral.

Perceptual data on the degree of program integration indicated that the program has two clearly identifiable phases of training, the theoretical phase at the college and the clinical portion at the affiliated hospitals. Within that structure there was little or no exchange of instructional staff however equipment and facilities were generally well shared. The cooperation and communication among the program constituents were perceived to be fairly good. Of the three integration indicators examined the mutual or two-way activities were rated marginally higher than either the college contribution to integration or the hospital contribution to integration.

Program effectiveness was examined from three perspectives. The student respondents of the program generally rated the eleven items on the effectiveness questionnaire between "fair" and "good" on the five-point scale. The program was also inspected by the Canadian Medical Association accreditation team in June 1976 and given full accreditation status. Finally the students performed very well on the 1977 registration examination attaining the highest overall average of the four programs studied. On the basis of these findings it was concluded that the Algonquin College program was very effective.

The next chapter presents a similar analysis and presentation of the findings of the Southern Alberta Institute of Technology joint cooperative program.

CHAPTER 7

DESCRIPTION AND ANALYSIS OF DATA OF THE SOUTHERN ALBERTA INSTITUTE OF TECHNOLOGY RESPIRATORY TECHNOLOGY PROGRAM

The major focus of this chapter is directed toward analysis of the data gathered by the research questionnaires and interviews on the Southern Alberta Institute of Technology (SAIT) respiratory technology program located in Calgary, Alberta. The chapter is organized into four sections. The first section provides a brief description of the institute and the respiratory technology program. Part two presents a linkage dimensions profile developed from information gathered by interview. The third section deals with the degree of program integration as perceived by both faculty and student respondents and finally a presentation of the findings on program effectiveness completes the chapter.

No indepth discussion on the findings is presented in this chapter as the major purpose of the chapter was to identify the linkage dimensions, degree of integration, and effectiveness of the SAIT program. The findings from this chapter then formed the basis for the comparison among the four programs presented in Chapter 9. The data also contributed to the generalizing analysis of the findings from the four programs. These appear in Chapter 10.

DESCRIPTION OF THE PROGRAM

The Southern Alberta Institute of Technology[1] (SAIT) is located in Calgary, Alberta on a 95 acre site in the Northwest region of Calgary overlooking the downtown area. The Institute is designated by the Province of Alberta as a "Specified Post-Secondary Education Institution" and is funded by the province through the Alberta Department of Advanced Education and Manpower. The original building was completed in 1916 and 11 students were enrolled. Since that time the Institute has undergone major changes and building projects including the change of name to the Southern Alberta Institute of Technology in 1961.

The 1975-76 full time day enrollment totalled 4,059 Business, Industrial, Technology and Applied Arts students in 20 major program clusters. In addition 4,664 apprenticeship students in 21 trade areas received instruction at the Institute during the academic year 1975-76.

One major cluster of programs offered by the Institute is the health related technology programs and collectively these programs form the Medical Science Department. Respiratory Technology is one of the programs offered by the Medical Science Department.

The Respiratory Technology Program

The Respiratory Technology program at SAIT commenced in 1969 and utilizes the facilities of SAIT and three affiliated Calgary hospitals. Prior to 1968 training for respiratory technology occurred "on the job" in local Calgary hospitals. For two years (1968-70) the Northern Alberta Institute of Technology taught the theoretical component of the program and students returned to the Calgary hospitals for their clinical experience. Through the active work of local Calgary physicians SAIT agreed to offer a program of Respiratory Technology and hired a Registered Respiratory Technologist to develop the program. The first students were admitted in the fall of 1969.

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[1] Hereinafter referred to as SAIT.

The actual program of study is of two years duration; ten months academic or theoretical training at the Institute and one year at an active treatment sponsoring hospital. Since 1969 the program has expanded but the fundamental concept of one year theoretical training followed by a clinical year is still in existence.

The two year program follows a basic curriculum as approved by the Canadian Society of Respiratory Technologists and the Canadian Medical Association Conjoint Committee on Program Accreditation. The Calgary program received full accreditation status from the CMA/CSRT committee in 1976.

In 1977 the institutions providing the clinical experience were Calgary General Hospital, the Foothills Hospital and the Holy Cross Hospital.

Due to the conjoint nature of the program the normal Institute procedures for student selection did not apply to the Respiratory Technology program. The students were selected primarily by the hospitals however the institute acted as a central agency to which the student submitted his application and where initial screening on academic background occurred. The final decision on student sponsorship and admission rested with the hospitals.

During the first year of the program the student was a full time student at SAIT and paid a tuition fee of $194.00. (Fees quoted were for the 1976-77 academic year.) All student privileges were extended to the respiratory technology students during the first year. When the student successfully completed the theoretical component of the course he was then admitted to the second year of the program. While at the sponsoring hospital the student received a stipend of $200 per month. No tuition fee was paid by the student during his clinical year.

In order to provide the program with advice and input from the participating institutions and to assist with the integration and cooperation of the organizations involved a program advisory committee was developed. The committee consisted of 12 members with representation from all the sponsoring hospitals and a member from the Faculty of Medicine, University of Calgary. The advisory committee met at SAIT twice a year, or more frequently if deemed necessary by the chairman. In addition there was an institute/hospital liaison committee called the "working committee" which was composed of department heads, clinical instructors, student representatives, and the institute respiratory technology staff. The liaison committee met approximately seven or more times a year.

More specific pertinent information on the program is provided as Appendix G which provides a synopsis of the data gathered during the interviews with key program personnel.

Linkage Dimensions

In order that the data gathered by interview may be analyzed in terms of the three linkage dimensions "formalization," "intensity," and "reciprocity" the data were coded in the manner described in Appendix D.

This approach to the analysis of data permitted development of Table 33 which identified a pattern of linkage for the Calgary Respiratory Technology program in order to answer the following questions:

1.0 Formalization

1.1 To what degree was the official sanction for the continuance of the program formalized?

1.2 To what extent were program coordination activities formalized?

1.3 To what extent were program liaison activities clearly delineated?

2.0 Intensity

2.1 What is the frequency of interaction among the program constituents?

2.2 What is the relative resource commitment of the participating institutions?

3.0 Reciprocity

3.1 To what degree are resources mutually exchanged?

3.2 To what degree were the terms of the relationship mutually agreed upon?

Findings

The research findings related to linkage dimensions are presented in relation to the formalization, intensity and reciprocity of the relationship. A summary of the linkage dimensions is provided at the end of this section.

Formalization of the relationship. On the linkage dimension "formalization" as indicated by the existence of formal contracts or agreements the program appeared to be tacit and informal as no formalization of the relationship between the program participants had occurred in terms of a contract or agreement. The second indicator of

Table 33

Summary of Linkage Dimensions Found in the Calgary (SAIT) Program

Linkage Dimensions	5[1]	4	3	2	1
A. Formalization of the relationship					
a) Formal agreement (written...informal)					X
b) Coordination (formal coordinator... informal)			X		
c) Procedural standardization (high...low)					
i) Liaison committee terms of reference					X
ii) Advisory committee terms of reference					X
iii) Coordination procedures or agreements					X
B. Intensity of the relationship					
a) Frequency of interaction (high...low)					
i) Liaison committee meetings	X				
b) Relative resource commitment (high...low)					
i) College		X			
ii) Hospitals		X			
C. Reciprocity of the relationship					
a) Resource reciprocity (high...low)					X
b) Definitional reciprocity (mutual...unilateral)					
i) Liaison committee terms of reference	X				
ii) Advisory committee terms of reference					X
iii) Coordination procedures					X

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[1] Each indicator was rated in accord with a scale that ranged from 5 to 1. The basis for this scale is shown in parentheses following each indicator (e.g., written (5) . . . informal (1)).

formalization was measured by the existence of formal coordination procedures. On this measure the program appeared to demonstrate a low degree of coordination. The third formalization indicator of "procedural standardization" also rated low on the five-point scale because very little documentation appeared to exist on aspects of integration and coordination.

Intensity of the relationship. The second research variable investigated was the intensity of the relationship as measured by the frequency of interaction and relative resource commitment of the participating institutions. The frequency of interaction was measured by examining the number of regularly scheduled meetings of the college/ hospital liaison committee. The interview data revealed that the committee held meetings on a monthly basis during the academic year hence the frequency of interaction was considered frequent. The second indicator of intensity, the relative resource committment, presented some difficulty with analysis however all participating hospitals provided a $200.00 monthly stipend per student and money was available to a limited extent for education related expenses. Although the actual budgetary procedures differed from hospital to hospital all three hospitals provided a full time respiratory instructor for the second year students. When queried specifically on their relative resource commitment to the program the hospital department heads perceived the commitment to be high. SAIT also had a high relative resource commitment with three full time registered respiratory technologists on staff, two large areas specifically designated as respiratory laboratories and a capital equipment inventory in excess of $100,000.00.

Reciprocity of the relationship. The third linkage dimension delineated in the program was the reciprocity of the relationship as measured by examining the degree to which resources were shared or exchanged among program constituents. The data revealed that little or no exchange occurred on a regular basis but if a specific need arose then equipment or other resources would be made available. The second measure of reciprocity was definitional reciprocity which examined the degree to which the written terms of the interaction were mutually agreed upon. As explained earlier, very few written documents existed that related to coordination and integration hence the only indicator of definitional reciprocity that could be examined were the terms of reference of the college/hospital liaison committee. The mutuality of agreement was high in that one case otherwise the indicator was not applicable.

Summary of the findings. The Calgary School of Respiratory Technology could be analyzed in terms of the three linkage dimensions as hypothesized by Marrett (1971). Information gathered by interview revealed that the formalization of the relationship was low with the relationship among the program participants being tacit and informal. The second research variable of intensity indicated that the relationship required considerable interaction and all participating institutions had a high resource commitment to the program. The third linkage dimension of reciprocity revealed that little or no exchange of resources occurred among program participants however the interviewees perceived this was in part due to a lack of need for exchange. No intervisitation of staff occurred for the purpose of providing instruction from either the college or participating hospital. Definitional reciprocity was likewise low primarily because of the lack of written coordination procedures or documentation. In the one measurable instance, the liaison committee terms of reference, all constituents had an opportunity to provide input however final approval rested with the advisory committee.

This particular program would appear to have a symmetrical power relationship with each component of the program being relatively autonomous. Thus cooperation rather than formalization would appear to dominate. This finding will be discussed in more detail in relation to the findings of the other programs in Chapter 9.

Degree of Program Integration

A description of the degree of integration of the joint cooperative program was provided through perceptual data gathered from respondents by means of an integration questionnaire designed by the researcher. The purpose of the integration questionnaire was to answer the three subproblems outlined at the beginning of Chapter 3 and restated below.

1.0 To what extent does the college contribute to integration?

2.0 To what extent does the hospital contribute to integration?

3.0 To what extent is there mutual or two-way integration among the program constituents?

The integration data from the Calgary program were tabulated and a brief summary of the findings is presented following each table.

Findings

Findings associated with program integration are presented in relation to the college contribution dimension, the hospital contribution dimension and mutual or two-way integration. An analysis of comparative data between faculty and student respondents is also presented in this section. The section on integration culminates with a summary of findings.

College contribution to integration. The data on the findings concerning the frequency of the college contribution activities are tabulated and presented in Table 34. Only one item that related to college instructor integration activities had a mean score above three on the five-point scale and the mode of the 11 respondents was "3." That particular item was associated with the determination of clinical course content by the college instructors. Two other items had modal scores of "2" and one item had a bimodal distribution on "1" and "2" of the five-point scale. On the questionnaire item concerning the frequency that equipment was supplied by the college to the hospital the mode was "2." Both the questionnaire and interview data indicated that senior students "never" return to classes at the institute while in their clinical year.

The questionnaire findings on the perceived quality of the college contribution activities are presented in Table 35. Two of the three items in Table 35 were concerned with college curriculum activities in order to determine the relevancy and applicability of those items to the clinical experience. The question on theoretical knowledge applicability had a bimodal response with eight respondents equally loading on "fair" and "good." On the other item relating to the relevancy of laboratory procedures the mode was "fair." The final item on this scale was related to rapidity of communication from the college to the

Table 34

College Contribution Dimension Scores
Frequency Scale--SAIT

Item	Frequency[1]					n	Mean
	1	2	3	4	5		
In the preparation of final hospital examinations assistance is received from the college instructors	3	6	2	0	0	11	1.90
In the determination of the course content for the hospital portion of the program input is received from the college instructors	0	2	5	3	1	11	3.27
How frequently is equipment provided by the college for the hospital components of the program	0	6	4	2	0	12	2.66
In general, how often do college instructors actively teach in the hospital portion of the program	8	2	2	0	0	12	1.50
How frequently do college instructors visit the hospital on a regular basis for the purpose of gaining clinical experience	5	5	1	0	0	11	1.63
How often are classes held at the college during the clinical year for students of participating Hospitals	10[2]	1	0	0	0	11	1.09

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[1] The scale used for these items was: 1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often; 5 = Frequently.

[2] The scale used for this item was: 1 = Never; 2 = 1 or 2 times/year; 3 = 3-4 times/year; 4 = 5-6 times/year; 5 = 7 or more times/year.

Table 35

College Contribution Dimension Scores
Quality Scale--SAIT

Item	Quality[1] 1	2	3	4	5	n	Mean
In general, how well does the theoretical knowledge presented in the first year relate to the practical application of that knowledge during the clinical year. Relationship is	0	2	4	4	1	11	3.30
To what extent are the laboratory procedures as taught during the first year relevant to the practical procedures of year two. Relevancy is	0	2	5	3	1	11	3.27
When changes are made to the routines, procedures or equipment in one part of the program (college or hospital) how quickly are these changes communicated to participants in the other part of the program (hospital or college). Speed of communication from college to hospital is	0	3	4	4	0	11	3.09

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

hospital. Again a bimodal response was identified on "fair" and "good" however three respondents felt the communication was "poor."

Hospital contribution to integration. The findings related to the frequency of the hospital contribution activities are presented as Table 36. Four of the six items in this table related to hospital instructor integration activities. Three of the four items were rated between "never" and "rarely" in the five-point scale and in two cases the modal response was "never." Three items questioned the hospital instructors involvement in the college portion of the program and the findings suggest that hospital staff do not teach at the college. These findings were consistent with the findings on the college instructors involvement at the hospitals which was also low. The respondents did however report that the hospital instructors "sometimes" assist in the determination of the college course content. This finding was similar to the college instructor contribution to the clinical course content.

The item related to the frequency that the hospitals provided equipment to the college had a bimodal response of "rarely" and "sometimes" which was consistent with findings of the interview data. Finally, the respondents were unanimous that the first year students visited the hospital seven or more times during their college year.

Table 37 presents the findings related to the perceived quality of the hospital contribution activities. The adequacy of the hospital visits during the first year had a bimodal response from ten respondents of "fair" and "good" however two respondents felt the adequacy was "poor." The mean was 3.25 on the five-point scale or just above "fair" on the actual scale. The second item in Table 37 related to speed of

Table 36

Hospital Contribution Dimension Scores
Frequency Scale--SAIT

Item	Frequency[1] 1	2	3	4	5	n	Mean
In the preparation of the final college examinations assistance is received from the hospital instructors	5	4	1	0	1	11	1.90
In the determination of the course content for the college portion of the program input is received from the hospital instructors	0	1	7	2	1	11	3.27
How frequently is equipment provided by the hospital for the college components of the program	1	5	5	1	0	12	2.50
In general, how often do hospital instructors actively teach in the college portion of the program	7	4	1	0	0	12	1.50
How frequently do hospital instructors participate in inservice\programs or professional development activities at the college	3	7	2	0	0	12	1.91
In general, how often are hospital visits held during the first year of the program	0[2]	0	0	0	12	12	5.00

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[1] The scale used for these items was: 1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often; 5 = Frequently.

[2] The scale used for this item was: 1 = Never; 2 = 1 or 2 times/year; 3 = 3-4 times/year; 4 = 5-6 times/year; 5 = 7 or more times/year.

Table 37

Hospital Contribution Dimension Scores
Quality Scale--SAIT

Item	Quality[1] 1	2	3	4	5	n	Mean
During the first year of the program how adequate are the planned hospital visits in reinforcing the theoretical learnings of the first year. Adequacy is	0	2	5	5	0	12	3.25
When changes are made to the routines, procedures or equipment in one part of the program (college or hospital) how quickly are these changes communicated to participants in the other part of the program (hospital or college). Speed of communication from hospital to college is	0	3	5	3	0	11	3.00

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

communication from the hospital to the college and this item had a mode and a mean of "3" or "fair" on the five-point scale. This finding was very similar to the rating given the speed of communication from the college to the hospital.

Mutual or two-way integration. Table 38 presents the findings related to the frequency of the mutual integration activities. Two items in this table related to the frequency of communication between the program coordinator at SAIT and hospital instructors and communication between the college/hospital instructors. In both cases the mode was "3" or "fair" on the five-point scale. As far as consultation among program constituents on student selection was concerned the mode was "5" or "excellent." This finding is significant when one remembers that the final decision in student selection rests with the hospitals. This finding was further substantiated by the interview data which explained that student selection procedures were clearly specified and involved all participating organizations.

The findings of the perceived quality of the mutual integration activities are presented as Table 39. The first item in the table addressed the issue of how effective is the utilization of available resources within the program. Six respondents answered "2" or "poor" on this item although three perceived the effectiveness to be "good." As indicated in the table the mean for this item was 2.58 on the five-point scale. The modal response for the questionnaire item on adequacy of the lines of communication was "3" or "fair" on the five-point scale. The adequacy of the relationship to cope with program related problems was perceived as being "fair" by four respondents and likewise "good" by

Table 38

Mutual Contribution Dimension Scores
Frequency Scale--SAIT

Item	Frequency[1] 1	2	3	4	5	n	Mean
The college program head and the hospital student coordinator (instructor) communicate (other than at committee meetings)	0	4	5	2	0	11	2.81
College/hospital instructional staff communicate (other than at committee meetings)	0	0	7	4	0	11	3.36
How much consultation is there between the college and hospital staff in the selection of students for the program. Consultation occurs	0	2	1	3	5	11	4.00

[1] The scale used for these items was: 1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often; 5 = Frequently.

Table 39

Mutual Contribution Dimension Scores
Quality Scale--SAIT

Item	Quality[1] 1	2	3	4	5	n	Mean
How effective is the present college/hospital relationship in permitting maximum utilization of available resources (people, time, money, etc.) from the various participants of the program. Effectiveness is	1	6	2	3	0	12	2.58
How adequate are the lines of communication between the college and hospital in assisting the overall program to keep current with the latest developments. Adequacy is	0	2	6	4	0	12	3.16
From time to time, program related problems arise which require some kind of joint-program solving activity. How adequate is the relationship between the college and hospital in coping with program related problems as they arise. Adequacy is	0	0	4	4	3	11	3.90
In general, how would you rate the integration of the hospital and college components of the program. Integration is	0	1	10	1	0	12	3.00

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

four respondents. The other three respondents rated the relationship as "excellent."

The final item on the quality scale was intended to provide an overall or global measure of the degree of program integration. Both the mean and the mode on this item were "3" or "fair" on the five-point scale.

Student responses on program integration. Both faculty and student questionnaires contained eight common integration items so that a comparison of the responses of the two groups could be made. Table 40 presents the mean scores for each item and the results of a t-Test for identifying differences between groups. Only one item revealed a significant difference at the 0.05 level between the two groups. The particular item involved asked the frequency that hospital instructors teach at the college and the means of the respondent groups was 1.50 for faculty and 1.05 for students which is reasonably congruent. However there were differences in the standard deviations of the respondent groups which accounts for the significant finding on a statistical basis. Overall the findings cited in Table 40 indicate the perceptions of faculty and students do not significantly differ on the eight integration items.

Summary of findings. The Calgary Respiratory Technology program, like both the London and Ottawa programs, has two distinct and readily identifiable phases of training. The first year of the program is conducted at SAIT while the second year was exclusively taught at the participating hospitals. Little or no exchange of instructional staff

Table 40

Comparison Between Faculty and Student Perceptions on Common Integration Items--SAIT

Item	Faculty	Student	Significant Difference
In general, how well did the theorectical knowledge presented in the first year relate to the application of that knowledge during the clinical year	3.36[1]	3.74	N.S.
In general, how often were hospital visits held during the first year of the program	5.00[2]	4.57	N.S.
During your first year of the program how adequate were the planned hospital visits in reinforcing the theoretical learnings of the first year	3.25[1]	2.95	N.S.
How often do college instructors actively teach in the hospital portion of the program	1.50[3]	1.00	N.S.
How often do hospital instructors actively teach in the college portion of the program	1.50[3]	1.05	0.01
To what extent were the laboratory procedures as taught during the first year relevant to the practical procedures of year two	3.27[1]	3.21	N.S.
How often were classes held at the college during the clinical year for students of the participating hospitals	1.09[2]	1.42	N.S.
In general, how would you rate the college and hospital components of the program	3.00[1]	2.79	N.S.

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

[2] The scale used for these items was: 1 = Never; 2 = 1 or 2 times/year; 3 = 3-4 times/year; 4 = 5-6 times/year; 5 = 7 or more times/year.

[3] The scale used for these items was: 1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often; 5 = Frequently.

occurred between the institutions involved and the amount of equipment exchange was also perceived to be low. The students were exposed to the hospitals during their first year through regular hospital visits however once the students completed their first year of training they did not return to SAIT at all.

The college and hospital staff appear to communicate well on curriculum development and related activities and student selection was well integrated. In general the cooperation and communication among the program constituents was perceived of as "fair" to "good."

An examination of the three dimensions of integration, 1) college contribution, 2) hospital contribution, and 3) mutual or two-way integration revealed that there was little difference among the dimensions. No one dimension appeared to be rated higher than the other two on the basis of the scores from the questionnaires.

Program Effectiveness

As explained earlier data on program effectiveness were gathered from three sources, perceptual data from senior students, program inspection reports of the Canadian Medical Association and the performance of the senior students on the 1977 national registration examination of the Canadian Society of Respiratory Technologists.

The major purpose of this section of the chapter is to answer the sub-problems on program effectiveness outlined in Chapter 3 and restated below.

1.0 How effective is the program according to student perceptions?

2.0 How effective is the program according to the Canadian Medical Association evaluation process?

3.0 How well did program graduates do on the 1977 national registration examination of the Canadian Society of Respiratory Technologists?

Findings

The research findings associated with program effectiveness are presented in relationship to student perceptions on first year effectiveness, clinical year effectiveness and overall indicators of program effectiveness. The second part of this section records pertinent information from the Canadian Medical Association external evaluation and finally the results of the 1977 examinations are included. At the end of this section a summary of findings is presented.

Student perceptions of program effectiveness. The senior students of the program were requested to complete an 11 item questionnaire on program effectiveness. The questionnaire was previously described in Chapter 3. Table 41 presents the findings related to student perceptions of the effectiveness of the first year of the program.

Two items on the questionnaire were considered indicators of first year effectiveness; one related to the adequacy of the theoretical knowledge presented while the second questioned the relevancy of the laboratory exercises completed. The respondents indicated some disagreement on the adequacy of the theory presented with the range being from "poor" to "excellent" however the modal response was "4" or "good" on the five-point scale. The relevancy of the laboratory exercises was rated as "fair" although five respondents stated they were "poor."

The findings related to second year effectiveness are presented as Table 42. Two of the four items related to clinical experience had

Table 41

Student Perceptions of First Year Effectiveness
SAIT

Item	Frequency[1]					n	Mean
	1	2	3	4	5		
How adequate was the college portion of the program in providing you with the theoretical knowledge necessary for the practice of respiratory technology	0	4	5	8	2	19	3.42
How relevant were the first year laboratory exercises in developing operational skills for equipment used in respiratory technology	1	5	11	1	1	19	2.78

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

Table 42

Student Perceptions of Second Year Effectiveness
SAIT

Item	Frequency[1]					n	Mean
	1	2	3	4	5		
How adequate was the clinical experience in allowing you to develop the skills necessary to practice respiratory technology	0	0	1	7	11	19	4.52
How would you describe the variety of clinical experiences provided during the second year	0	0	0	6	13	19	4.68
In general, how would you rate the clarity of explanation on how clinical experiences are to be carried out	0	1	5	9	4	19	3.84
In general, how well was first year learning reinforced during the second year	0	0	5	13	1	19	3.78

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

modal responses of "5" or "excellent" on the five-point scale indicating the students were very satisfied with the adequacy and variety of clinical experiences afforded them during their clinical year. The other two items of this scale were rated "4" on the five-point scale by the majority of respondents. Overall the students of the Calgary program perceived their second year to be very satisfactory.

Five items were considered as indicators of overall program effectiveness and the findings are presented as Table 43. Four of the five items in this scale had modal responses of "4" on the five-point scale although a diversity of opinion existed on all items. For example, on the item asking if the student would recommend the program to a close friend or relative three stated they "would not recommend" while five stated they would "very highly recommend." The majority of students indicated the program was "fairly stimulating" which was the only item to be rated less than "4" on the five-point scale. In general, the students felt the overall effectiveness of the program was "good" to "excellent."

Canadian Medical Association evaluation. The survey reports of the Canadian Medical Association accreditation process were reviewed to identify specific comments or recommendations that concerned linkage dimensions, integration activities and overall program effectiveness.

The SAIT program and affiliated hospitals were first inspected in 1975 and segments of the program were reinspected in 1976. At the time of the first inspection two of the three affiliated hospitals were given full accreditation status of four years. The institute was given

Table 43

Student Perceptions of Overall Program Effectiveness--SAIT

Item	Frequency[1]					n	Mean
	1	2	3	4	5		
In general how would you rate the quality of instruction you received during the total program	0[1]	3	2	14	0	19	3.57
In general how stimulating has the total program been	0[2]	0	8	7	4	19	3.78
From time to time job related problems arise which require trouble shooting skills such as in the case of ventilator failure. How well did the program prepare you to handle such problems	0[1]	6	5	7	1	19	3.15
Would you recommend the program you are experiencing to a close friend or relative if they were interested in pursuing a career in respiratory technology	0[3]	3	4	7	5	19	3.73
In general how would you rate the overall effectiveness of the total two year program	0[1]	0	4	9	6	19	4.10

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

[2] The scale used for this item was: 1 = Boring; 2 = Dull; 3 = Fairly stimulating; 4 = Stimulating; 5 = Very stimulating.

[3] The scale used for this item was: 1 = Not recommend; 2 = Recommend with reservations; 3 = Recommend; 4 = Highly recommend; 5 = Very highly recommend.

a two year provisional status while one affiliated hospital was given a one year provisional approval. The major reasons given for the two year status at the institute were a need for increased technical instruction by an instructor with recent clinical experiences, increased specialist instruction and greater laboratory time in the basic sciences and respiratory technology procedures. The survey team also commented that there should be some participation by the hospital instructors in the first year of the program and participation by SAIT staff in the second year program. Further the SAIT staff should have increased participation with the selection of students and second year evaluation procedures.

The major areas of concern with the one affiliated hospital cited by the survey team included the relatively low departmental commitment to students due to patient service priorities, questionable departmental supervision and instruction and finally the sporadic physician input to the program.

In January 1976 the institute and the affiliated hospital were reinspected and both received full accreditation status. It was commented by the chairman of the survey party that the major areas of weakness as noted in the 1975 survey report have been corrected and appropriate action taken on the recommendations.

1977 Registration examinations results. Twenty-three Calgary program graduates wrote the 1977 registration examination and nineteen were successful. The registration examination process consisted of two types of evaluation. The first part was a 260 multiple choice examination and the second part was a latent image branching logic clinical assessment examination. The national average on the multiple choice examination was 169 with a standard deviation of 21. The Calgary graduates also achieved a mean score of 169 however their standard deviation was 15. On the latent image examination the national average was 438 with a standard deviation of 223; the Calgary graduates achieved a mean score of 531 with a standard deviation of 200.

Summary of the findings. In general the students rated the items on the effectiveness questionnaire between "fair" and "good" on the five-point scale. On the item which gave the respondents an opportunity to globally assess program effectiveness the mode was "good" and the mean 4.10 on the five-point scale. Another global indicator was the degree to which the respondents would recommend the program to a friend or relative. This item elicited a diversity of opinion from "2" to "5" on the five-point scale however the mode was "would highly recommend."

The Calgary program received full accreditation status in 1976 and the survey team indicated general satisfaction with the program. It would appear that one recommendation made by the survey team concerning interagency instructional staff exchange has not been implemented according to the findings of the integration questionnaire. However the student selection procedures recommendation was acted upon and the procedures are fully integrated according to the perceptions of the faculty respondents.

The performance of the Calgary graduates on the national examination was identical to the national average on the multiple choice examination. Their performance on the latent image examination was almost 100 points above the national mean. The overall failure rate of the Calgary graduates for 1977 was 17 percent.

Based on the above findings it would appear that the Calgary program was effective at the time the study was completed.

SUMMARY

Chapter 7 presented a brief description of the SAIT respiratory technology joint cooperative program, a linkage dimensions profile, the degree of program integration and information on the effectivenesss of the program.

The linkage dimensions profile indicated that, in general, the linkage dimension of formalization was low with the relationship being tacit and informal. No contracts existed between the organizations involved in the joint cooperative program and coordination was left to a liaison committee that does not have the authority to act in the various institutions involved. Few specific interagency procedures existed with the exception of student selection procedures. The second linkage dimension studied was the intensity of the relationship. One indicator revealed that the joint cooperative program required considerable interaction among the program constituents, in addition, all organizations involved had high relative resource commitment to the program. The final linkage dimension studied was the reciprocity of the relationship. The first indicator of reciprocity was the amount of exchange that occurred between the organizations involved and the exchange was found to be relatively low. In contrast, the second indicator, definitional reciprocity, was high where formal procedures existed.

The findings on the degree of program integration indicated that the program had two distinct and readily identifiable phases of training. The theoretical component was taught at SAIT and the clinical experience provided at the hospitals. Little or no exchange of instructional staff occurred among the organizations involved and the amount of equipment exchange on a casual basis was also low. The students visited the hospitals regularly during their first year, however once the students reached the hospital portion of the program they did not return to the institute at all. Communication among the college and hospital staff appeared to be good on curriculum development and related activities and student selection was well integrated. Overall, communication and cooperation were perceived of as "fair" to "good." Of the three integration variables studied, there appeared to be little difference among the college contribution to integration, hospital contribution to integration or mutual or two-way integration.

The student respondents generally rated the items on the program effectiveness questionnaire between "3" and "4" on the five-point scale. This overall finding suggested that the students perceived the program effectiveness to be somewhere from "good" to "excellent." The Canadian Medical Association accreditation survey reports awarded the program full accreditation status in 1976 indicating they perceived the program as effective.

The results of the 1977 national registration examinations revealed the Calgary graduates were 83 percent successful on the examination. Their performance on the multiple choice part of the examination process was identical to the national mean while their performance on the clinical assessment examination was almost 100 points above the mean. These findings supported the conclusion that the Calgary program was reasonably effective in preparing its graduates for national certification.

The next chapter presents a similar analysis and presentation on the Northern Alberta Institute of Technology program located in Edmonton, Alberta.

CHAPTER 8

DESCRIPTION AND ANALYSIS OF DATA OF THE NORTHERN ALBERTA INSTITUTE OF TECHNOLOGY RESPIRATORY TECHNOLOGY PROGRAM

This chapter provides an analysis of the information gathered by interviews and questionnaires on the Northern Alberta Institute of Technology (NAIT) respiratory technology program located in Edmonton, Alberta. The chapter is organized into four basic sections in accord with the format of the previous three chapters. The first section provides a brief description of the institute followed by an overview of the respiratory technology program. Part two develops a linkage dimensions profile from the information obtained by interview. The third section deals with the degree of program integration as perceived by faculty and student respondents. Finally the findings on program effectiveness are presented. No indepth discussion on the findings is presented in this chapter as the major purpose was to provide an overview of the NAIT program on the research variables studied. The information from this chapter then formed the basis for the comparative analysis of the four programs provided in Chapter 9. The data from this chapter also contributed to the generalizing analysis of the four programs presented in Chapter 10.

DESCRIPTION OF THE PROGRAM

The Northern Alberta Institute of Technology[1] (NAIT) is located in Edmonton, Alberta on a 46 acre campus close to the Municipal Airport. The Institute was established by the Government of Alberta and is funded through the Alberta Department of Advanced Education and Manpower. The original buildings were completed in 1963 and since that time five major additions have occurred including the development of three satellite campuses in the Edmonton area.

The 1975-76 full time day enrollment totalled 4,374 Business, Industrial, Technology and Vocational students in 56 programs. In addition 6,738 apprenticeship students in 27 trade areas received instruction at the Institute during the academic year 1975-76.

One major cluster of programs offered by the Institute is the health related technology programs and collectively these programs form the Medical Science Department. Respiratory technology is one of the programs offered by the Medical Science Department.

The Respiratory Technology Program

This particular joint cooperative program commenced in 1967 and utilizes the facilities of NAIT and three affiliated Edmonton hospitals. Prior to 1967 training occurred "on the job" in local Edmonton hospitals. In 1966 a number of Edmonton physicians met with the administration of NAIT and set up an Ad Hoc Committee to examine training of Respiratory Technologists. During a meeting held in December, 1966, an informal arrangement was reached that the Institute would provide the theoretical training during the first year and certain affiliated hospitals would then provide the clinical experience during the second year. Since 1967 the program had expanded but the fundamental concept of one year of theoretical training followed by a clinical year was still in existence. In 1977 the affiliated hospitals included the Edmonton General Hospital, Royal Alexandra Hospital and the University of Alberta Hospital.

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[1] Hereinafter referred to as NAIT.

Due to the conjoint nature of the program the normal institute selection and admission policies did not apply to the respiratory technology program. Potential respiratory technology students were recruited by both the institute and the affiliated hospitals however the final decision on whether or not the student was acceptable rested with the hospitals.

During the first year of the program the student was a full time student of the Institute and in the 1976-77 academic year paid $194.00 tuition fees. All student privileges were extended to the respiratory technology students during their first year at NAIT. When a student successfully completed the Institute portion of the program he was then admitted to the second year of the program which ran from July 1 to June 30 of each year. While at the sponsoring hospital the student received a stipend which during 1976-77 amounted to $200.00 per month. No tuition fee was paid by the student during the clinical year. The student may, upon request, receive a card allowing him to use the library at the Institute but he could not avail himself of the other facilities as he was not considered a regular member of the NAIT student body. The Institute issues a NAIT Diploma to the student upon successful completion of the hospital portion of the program.

In order to oversee the program and assist with the integration and cooperation of the organizations involved a program advisory committee existed. The committee consisted of 11 members with representation from the major Edmonton hospitals, the University of Alberta and the Alberta Hospital Association. This committee met at the Institute once a year. In addition, there was an institute/hospital liaison committee composed of department heads, clinical instructors, student representatives and the institute respiratory technology teaching staff. This committee met approximately five or more times per year.

More specific pertinent information on the program is provided in the presentation of the data gathered during the interviews with the three hospital department heads and the institute program head (see Appendix H).

Linkage Dimensions

In order to analyze the data gathered by interview in terms of linkage dimensions and answer the questions stated below the data was coded in the manner described in Appendix D . This treatment of the data resulted in the generation of Table 44 which showed a particular pattern of linkage dimensions for the Edmonton Respiratory Technology program.

1.0 Formalization

1.1 To what degree was the official sanction for the continuance of the program formalized?

1.2 To what extent were program coordination activities formalized?

1.3 To what extent were program liaison activities clearly delineated?

Table 44

Summary of Linkage Dimensions Found in the Edmonton (NAIT) Program

Linkage Dimensions	5[1]	4	3	2	1
A. Formalization of the relationship					
a) Formal agreement (written...informal)					X
b) Coordination (formal coordinator... informal)			X		
c) Procedural standardization (high...low)					
i) Liaison committee terms of reference					X
ii) Advisory committee terms of reference					X
iii) Coordination procedures or agreements					X
B. Intensity of the relationship					
a) Frequency of interaction (high...low)					
i) Liaison committee meetings	X				
b) Relative resource commitment (high...low)					
i) College		X			
ii) Hospitals		X			
C. Reciprocity of the relationship					
a) Resource reciprocity (high...low)					X
b) Definitional reciprocity (mutual...unilateral)					
i) Liaison committee terms of reference	X				
ii) Advisory committee terms of reference					X
iii) Coordination procedures					X

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[1] Each indicator was rated in accord with a scale that ranged from 5 to 1. The basis for this scale is shown in parentheses following each indicator (e.g., written (5) . . . informal (1)).

2.0 Intensity

2.1 What is the frequency of interaction among the program constituents?

2.2 What is the relative resource commitment of the participating institutions?

3.0 Reciprocity

3.1 To what degree are resources mutually exchanged?

3.2 To what degree were the terms of the relationship mutually agreed upon?

Findings

The research findings associated with linkage dimensions are presented in the order of the questions previously cited. A summary is provided at the end of this section.

Formalization of the relationship. On the research variable "formalization" as measured by the existence of formal contracts or agreements the program appeared to be tacit and informal with no contracts or agreements in existence. Another indicator of formalization was the degree of formalization as measured by the existence of a formal coordinator or written coordination procedures. On this measure the program appeared to demonstrate a low degree of coordination. The third formalization indicator of "procedural standardization" also rated low on the five-point scale.

Intensity of the relationship. The second linkage dimension examined was the intensity of the relationship and the two indicators of intensity investigated were the frequency of the interaction and relative resource commitment of the participating institutions. The frequency of interaction indicator as measured by the number of scheduled meetings of the liaison committee revealed that meetings occurred monthly from September to June hence it was considered that the interaction was frequent. The second indicator of intensity was more difficult to quantify however all participating hospitals provided a stipend of $200.00 per month per student and money was available to a limited extent for education related expenses. The actual budgetary procedures appeared to vary from hospital to hospital although all three hospitals provided a full time respiratory instructor for the second year students. All hospital department heads stated they considered their resource commitment to the program to be high. The institute also had a high resource commitment with three full time respiratory technology faculty, two specified respiratory laboratories and capital equipment on hand in excess of $100,000.00.

Reciprocity of the relationship. The third research variable investigated was the reciprocity of the relationship. One indicator of the reciprocity of the relationship was measured by examining the degree to which resources were shared or exchanged by the constituents of the program. The actual amount of exchange was very low or non-existent however the interviewees stated that this was primarily due to the lack of need for exchange rather than a lack of cooperation among the program participants.

The other measure of reciprocity was definitional reciprocity which examined the degree to which the written terms of interaction were mutually agreed upon. This indicator only applied to the terms of reference of the liaison committee as very few written coordination procedures appeared to exist. The mutuality of agreement was deemed high in that specific instance otherwise the indicator was not applicable.

Summary of the findings. The Edmonton Respiratory Technology program could be analyzed in terms of the three linkage dimensions formalization, intensity and reciprocity. The data revealed that the linkage dimension of formalization was low with the relationship among the program participants being tacit and informal. The second linkage dimension of intensity indicated that the relationship required considerable interaction and all program constituents had a high resource commitment to the program. The final linkage dimension of reciprocity revealed the degree of resource exchange was low however the reason for this may be due to the nature of the specialized respiratory equipment and the size of the units involved. There is little exchange of instructional staff from one part of the program to the other. Definitional reciprocity was also low in part because of the paucity of written coordination procedures. The findings on the Edmonton program were identical to those of the Calgary program.

Degree of Program Integration

The degree of integration of the joint cooperative program was measured by use of a 24 item questionnaire which identified a series of items that were considered important to have a high degree of collaboration of effort in such a program. The questionnaire was previously described in Chapter 3. The major purpose of the questionnaire was to answer the three sub-problems on integration outlined in Chapter 3 and restated below.

1.0 To what extent does the college contribute to integration?

2.0 To what extent does the hospital contribute to integration?

3.0 To what extent is there mutual or two-way integration among the program constituents?

All the data were tabulated and brief summary of the findings is presented at the end of each table.

Findings

The research findings on integration are presented in relation to the college contribution dimension, the hospital contribution dimension, and mutual or two-way integration. A comparison of faculty and student responses to eight common integration items is also included in this section. At the end of the data presentation a summary of the findings is presented.

College contribution to integration. Table 45 summarizes the data concerning the frequency of the college contribution activities. Two of the four items that related to college instructor integration activities had ratings between "3" and "4" on the five-point scale. Item one has a mode of "3" while the item that was concerned with determination of clinical course content had a bimodal distribution loading on "3" and "4." The other two items related to instructor activities had modes of "2" on the five-point scale. The questionnaire item related to frequency that equipment was supplied by the college to the hospital also had a mode of "2." The final item on the frequency scale was directed at the number of times the student had classes at the college while in his clinical year. Both the questionnaire and interview data indicated that such an activity was not a component of the program.

The research findings on the perceived quality of the college contribution to integration are presented as Table 46. Curriculum

Table 45

College Contribution Dimension Scores
Frequency Scale--NAIT

Item	Frequency[1]					n	Mean
	1	2	3	4	5		
In the preparation of final hospital examinations assistance is received from the college instructors	1	3	5	0	1	10	2.70
In the determination of the course content for the hospital portion of the program input is received from the college instructors	0	0	4	4	1	9	3.66
How frequently is equipment provided by the college for the hospital components of the program	3	5	2	0	0	10	1.90
In general, how often do college instructors actively teach in the hospital portion of the program	3	6	1	0	0	10	1.80
How frequently do college instructors visit the hospital on a regular basis for the purpose of gaining clinical experience	2	4	2	1	1	10	2.50
How often are classes held at the college during the clinical year for students of participating hospitals	8[2]	1	0	0	1	10	1.50

[1] The scale used for these items was: 1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often; 5 = Frequently.

[2] The scale used for this item was: 1 = Never; 2 = 1 or 2 times/year; 3 = 3-4 times/year; 4 = 5-6 times/year; 5 = 7 or more times/year.

Table 46

College Contribution Dimension Scores
Quality Scale--NAIT

Item	Quality[1] 1	2	3	4	5	n	Mean
In general, how well does the theoretical knowledge presented in the first year relate to the practical application of that knowledge during the clinical year. Relationship is	0	0	3	7	0	10	3.70
To what extent are the laboratory procedures as taught during the first year relevant to the practical procedures of year two. Relevancy is	0	0	4	6	0	10	3.60
When changes are made to the routines, procedures or equipment in one part of the program (college or hospital) how quickly are these changes communicated to participants in the other part of the program (hospital or college). Speed of communication from college to hospital is	0	0	2	8	0	10	3.80

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

activities of the college portion of the program were the focus of two of the three items in this table. Both of these items had modal responses of "4" or "good" on the five-point scale indicating that the curriculum activities were relevant to the clinical experience of the second year. The last item on the quality scale concerned the rapidity that changes were communicated from the college to the hospital. Eight respondents indicated that the communication was "4" or "good" on the five-point scale.

Hospital contribution to integration. Table 47 presents the findings related to the frequency of the hospital contribution activities. Of the six items in Table 47 four relate to hospital instructor integration activities. Two of the items had a modal response of "rarely" indicating the relatively low involvement of hospital instructors in college examination activities and inservice programs. However hospital instructors did participate in the teaching function at the college since eight respondents reported the frequency of such an activity to be "3" or "sometimes" on the five-point scale. The final item related to hospital instructor activities and respondents indicated that hospital instructors were "often" involved in the determination of the course content for the college portion of the program.

The frequency that hospitals provided equipment to the college was rated at "3" or "sometimes" on the five-point scale by the majority of respondents although four suggested it was only "rarely." During the first year of the program the students apparently visited the hospital seven or more times per year.

Table 47

Hospital Contribution Dimension Scores
Frequency Scale--NAIT

Item	Frequency[1] 1	2	3	4	5	n	Mean
In the preparation of the final college examinations assistance is received from the hospital instructors	3	5	1	0	1	10	2.10
In the determination of the course content for the college portion of the program input is received from the hospital instructors	0	0	1	7	1	9	4.00
How frequently is equipment provided by the hospital for the college components of the program	0	4	5	1	0	10	2.70
In general, how often do hospital instructors actively teach in the college portion of the program	0	1	8	1	0	10	3.00
How frequently do hospital instructors participate in inservice programs or professional development activities at the college	3	5	1	1	0	10	2.00
In general, how often are hospital visits held during the first year of the program	0[2]	1	0	2	7	10	4.50

[1] The scale used for these items was: 1 = Never; 2 = Rarely, 3 = Sometimes; 4 = Often, 5 = Frequently.

[2] The scale used for this item was: 1 = Never; 2 = 1 or 2 times/year; 3 = 3-4 times/year; 4 = 5-6 times/year; 5 = 7 or more times/year.

The findings related to the perceived quality of the hospital contribution activities are presented as Table 48. Six of the 10 respondents indicated the adequacy of the hospital visits during the first year was "good." However the speed of communication from the hospital to the college was rated "3" or "fair" on the five-point scale. This finding was lower than the respondents perception of the speed of communication from the college to the hospital which had a modal response of "4" or "good."

Mutual or two-way integration. This part of the section on integration is organized in the same manner as the previous dimensions with Table 49 presenting the findings of the frequency of the mutual integration activities. Two of the three items in this table related to the frequency of communication between the program head of the college and the hospital instructors and among the college/hospital instructors themselves. Both items had a modal score of "4" or "good" on the five-point scale. However the communication between the college/hospital instructional staff was rated higher if one compares the mean scores which were 3.35 and 3.80 respectively. The last item in Table 49 related to the degree of consultation between the college/hospital personnel on student selection. This item elicited some disagreement among the respondents because although the mode was "3" three people rated the item "4" and two rated it "5." It should be remembered that the final decision rests with the hospitals in this particular program hence it could be imputed from the findings that the college staff are consulted by some hospitals very regularly but perhaps less so by others.

Table 48

Hospital Contribution Dimension Scores Quality Scale[1]--NAIT

Item	Quality[1] 1	2	3	4	5	n	Mean
During the first year of the program how adequate are the planned hospital visits in reinforcing the theoretical learnings of the first year. Adequacy is	0	1	3	6	0	10	3.50
When changes are made to the routines, procedures or equipment in one part of the program (college or hospital) how quickly are these changes communicated to participants in the other part of the program (hospital or college). Speed of communication from hospital to college is	0	3	4	3	0	10	3.00

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[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

Table 49

Mutual Contribution Dimension Scores

Frequency Scale--NAIT

Item	Frequency[1] 1	2	3	4	5	n	Mean
The college program head and the hospital student coordinator (instructor) communicate (other than at committee meetings)	0	1	3	4	2	10	3.35
College/hospital instructional staff communicate (other than at committee meetings)	0	1	1	7	1	10	3.80
How much consultation is there between the college and hospital staff in the selection of students for the program. Consultation occurs	0	1	4	3	2	10	3.60

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[1] The scale used for these items was: 1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often; 5 = Frequently.

Table 50 presents the findings of the perceived quality of the mutual integration activities. Five respondents perceived the adequacy of utilization of available resources to be "3" or "fair" on the five-point scale, four respondents were equally divided on "good" and "excellent" resulting in a mean score of 3.50. Both the mode and mean score for the adequacy of lines of communication was "4" or "good" which was consistent with previous findings on communication. In addition the modal score of the respondents indicated that the adequacy of the relationship to deal with program related problems was "excellent." The final item in Table 50 was intended to provide a global measure of the degree of program integration and the respondents rated the degree of integration as "good."

Student responses on program integration. Eight integration items were common to both the faculty and student questionnaire in order to compare the responses of the different respondent groups. Table 51 presents the faculty and student responses on the eight common items and the results of a t-Test for identifying differences between groups. The data revealed that perceptions of the two groups only differed significantly at the 0.05 level on one item. That item related to the global measure of program integration and students perceived the integration as "fair" while faculty felt it was "good." Overall the faculty and students did not differ significantly implying that the faculty perceptions of reality were similar to those of the students in this particular program.

Table 50

Mutual Contribution Dimension Scores
Quality Scale--NAIT

Item	Quality[1]					n	Mean
	1	2	3	4	5		
How effective is the present college/hospital relationship in permitting maximum utilization of available resources (people, time, money, etc.) from the various participants of the program. Effectiveness is	0	1	5	2	2	10	3.50
How adequate are the lines of communication between the college and hospital in assisting the overall program to keep current with the latest developments. Adequacy is	0	0	3	4	3	10	4.00
From time to time, program related problems arise which require some kind of joint-problem solving activity. How adequate is the relationship between the college and hospital in coping with program related problems as they arise. Adequacy is	0	0	1	4	5	10	4.40
In general, how would you rate the integration of the hospital and college components of the program. Adequacy is	0	0	2	7	1	10	3.90

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[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

Table 51

Comparison Between Faculty and Student Perceptions on Common Integration Items--NAIT

Item	Faculty	Student	Significant Difference
In general, how well did the theoretical knowledge presented in the first year relate to the application of that knowledge during the clinical year	3.70[1]	3.91	N.S.
In general, how often were hospital visits held during the first year of the program	4.50[2]	4.74	N.S.
During your first year of the program how adequate were the planned hospital visits in reinforcing the theoretical learnings of the first year	3.50[1]	3.00	N.S.
How often do college instructors actively teach in the hospital portion of the program	1.80[3]	1.43	N.S.
How often do hospital instructors actively teach in the college portion of the program	3.00[3]	2.43	N.S.
To what extent were the laboratory procedures as taught during the first year relevant to the practice procedures of year two	3.60[1]	3.83	N.S.
How often were classes held at the college during the clinical year for students of the participating hospitals	1.50[2]	1.61	N.S.
In general, how would you rate the college and hospital components of the program	3.90[1]	3.26	0.03

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

[2] The scale used for these items was: 1 = Never; 2 = 1 or 2 times/year; 3 = 3-4 times/year; 4 = 5-6 times/year; 5 = 7 or more times/year.

[3] The scale used for these items was: 1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often; 5 = Frequently.

Summary of findings. The Edmonton Respiratory Technology program consisted of two readily identifiable and separate phases. The first year, the theoretical component was completed at NAIT with the student being given an opportunity to visit the hospital seven or more times during that year. Once the student was promoted to the clinical year he did not return to NAIT again for any further classes. Some exchange of instructional personnel did occur within the program and according to the data the hospital instructors tended to teach at the institute more than the college instructors did at the hospital. The amount of sharing of equipment was relatively low although the respondents indicated the utilization of resources was "good."

All items that related to communication and cooperation were rated above the mid-point of three on the five-point scale with nine items being rated better than 3.50. These findings suggest that the communication among the program participants was good.

An examination of the findings in terms of the three dimensions of integration, the mutual or two-way integration activities appear to be higher than either the college contribution or the hospital contribution to integration.

Program Effectiveness

Three different sources were tapped in order to gather data on program effectiveness. First student perceptions were gathered by means of questionnaire, secondly program inspection reports of the Canadian Medical Association were reviewed and finally the results of the 1977 national registration examinations were obtained from the Canadian Society of Respiratory Technologists.

The major purpose of this section of the chapter is to answer the following questions restated from Chapter 3.

1.0 How effective is the program according to student perceptions?

2.0 How effective is the program according to the Canadian Medical Association evaluation process?

3.0 How well did the program graduates do on the 1977 national registration examination of the Canadian Society of Respiratory Technologists?

Findings

The research findings associated with program effectiveness are presented in relation to student perceptions of first year effectiveness, clinical year effectiveness and global indicators of overall program effectiveness. The second part of this section includes pertinent findings from the Canadian Medical Association inspection reports and finally the results of the 1977 registration examination are presented. A summary of findings completes this section on program effectiveness.

Student perceptions of program effectiveness. Perceptual data were gathered by an 11 item questionnaire from the senior students of the program. Two items related to first year effectiveness; four items related to second year effectiveness; and five items were concerned with overall measures of program effectiveness.

Table 52 presents the findings related to first year effectiveness. Two items of the questionnaire related to first year effectiveness; one was concerned with the adequacy of theoretical knowledge presented while the second questioned the relevancy of the first year laboratory exercises. Both items had a modal response of "4" or "good" on the five-point scale. The mean in both cases was also 4.00.

Table 52

Student Perceptions of First Year Effectiveness
NAIT

Item	Frequency[1]					n	Mean
	1	2	3	4	5		
How adequate was the college portion of the program in providing you with the theoretical knowledge necessary for the practice of respiratory technology	0	0	3	15	5	23	4.08
How relevant were the first year laboratory exercises in developing operational skills for equipment used in respiratory technology	0	0	5	12	5	22	4.00

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

The findings on second year effectiveness are presented as Table 53. Two of the four items that purported to measure second year effectiveness had a modal response of "5" or "excellent" on the five-point scale. These items were related to the adequacy and variety of the clinical experience provided in the clinical year. The other items had a modal rating of "4" on the five-point scale and in both cases a greater diversity of opinion can be noted by the range of the responses. In general, the student perceptions on the specific items delineated indicated that they were very satisfied with their experiences during the clinical year.

The findings of the overall indicators of program effectiveness are presented as Table 54. Four of the five indicators of overall program effectiveness had modal responses of "4" on the five-point scale with three items having a mean score of 4.00 or greater. These items included the quality of instruction, stimulation of the program and the overall effectiveness of the program. The item that related to trouble shooting skills had a wide range of responses with mode being "2" or "poor" with a mean of 3.40 on the five-point scale. In general, the students perceived the overall effectiveness of the program to be between "good" and "excellent."

Canadian Medical Association evaluation. The on-site survey reports of the Canadian Medical Association accreditation process were reviewed to identify pertinent observations or commentary that were related to linkage dimensions, integration activities and overall program effectiveness.

The NAIT program and the three affiliated hospitals were

Table 53

Student Perceptions of Second Year Effectiveness
NAIT

Item	Frequency[1] 1	2	3	4	5	n	Mean
How adequate was the clinical experience in allowing you to develop the skills necessary to practice respiratory technology	0	1	1	10	11	23	4.34
How would you describe the variety of clinical experiences provided during the second year	0	0	0	8	14	22	4.63
In general, how would you rate the clarity of explanation on how clinical experiences are to be carried out	0	1	5	12	4	22	3.86
In general, how well was first year learning reinforced during the second year	1	1	7	12	2	23	3.56

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

Table 54

Student Perceptions of Overall Program Effectiveness--NAIT

Item	Frequency[1]					n	Mean
	1	2	3	4	5		
In general how would you rate the quality of instruction you received during the total program	0[1]	0	2	18	3	23	4.04
In general how stimulating has the total program been	0[2]	0	3	15	5	23	4.08
From time to time job related problems arise which require trouble shooting skills such as in the case of ventilator failure. How well did the program prepare you to handle such problems	0[1]	7	4	6	5	22	3.40
Would you recommend the program you are experiencing to a close friend or relative if they were interested in pursuing a career in respiratory technology	0[3]	2	6	11	3	22	3.68
If general how would you rate the overall effectiveness of the total two year program	0[1]	0	4	14	4	22	4.00

[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

[2] The scale used for this item was: 1 = Boring; 2 = Dull; 3 = Fairly stimulating; 4 = Stimulating; 5 = Very stimulating.

[3] The scale used for this item was: 1 = Not recommend; 2 = Recomend with reservations; 3 = Recommend; 4 = Highly recommend; 5 = Very highly recommend.

inspected in January 1975 and at that time the program was awarded full accreditation status for four years which is the maximum time period allowed. This program was the only one in Canada in which full accreditation status was given on the basis of one inspection. Some of the pertinent comments provided by the survey party were: good organization; well qualified staff; cooperative administration; good facilities; and the liaison between the hospitals and the institute well established. Areas of minor weakness and recommended action suggested by the survey team included the need for joint student selection procedures, establishment of a joint examination process for second year students and increased rotation of students in the second year to all three hospitals. The comment by the survey party chairman summarized the view of the survey team at the time of the on-site visitation. "We recognize that this is a good program with excellent instruction and responsiveness to the needs of the province."

1977 Registration examination results. Thirty Edmonton program graduates wrote the 1977 registration examination and sixteen were successful. The failure rate was an unprecedented 46.6 percent. The registration examination process was composed of two types of evaluation. The first part was a 260 item multiple choice examination and the second was a latent image branching logic clinical assessment examination. The national average on the multiple choice examination was 169 with a standard deviation of 21. The Edmonton program graduates achieved a mean score of 162 with a standard deviation of 21. On the latent image examination the Edmonton graduates had a mean score of 315 compared to the national mean of 438. The standard deviations were

221 and 225 respectively. The criteria for passing the examinations were established by the national body as one standard deviation below the mean for both aspects of the evaluation process. One hundred and fifty seven candidates challenged the examinations and 120 were successful hence 37.8 percent of total failures emanated from the Edmonton program.

Summary of the findings. The students of the Edmonton program rated seven of the eleven items "good" or better on the five-point scale and the lowest mean response was 3.40. On the two items considered to reflect the students' overall view on the program both had modal scores of "good." One item was related to the degree that the respondent would recommend the program to a close friend or relative and a response of "4" indicated they "would highly recommend" the program. The other item asked the respondents to rate the overall program effectiveness and the modal response of "4" indicated the perceived effectiveness was "good."

Consonant with the perceptions of the students, the Canadian Medical Association evaluation also rated the program highly although the date of the survey was January 1975.

The results of the 1977 national registration examination that was written by the program graduates of the Edmonton program revealed that the graduates performed below the national average on both examinations and 46.6 percent or 14 of the 30 that wrote the examinations failed. These results were considered significant when the Edmonton failures represented 37.8 percent of the total unsuccessful candidates.

The above findings are obviously noncongruent when both the student evaluation and the Canadian Medical Association rated the program highly yet the graduates performed very badly when compared to their peers. The Canadian Medical Association evaluation can possibly be explained because the survey was completed in January 1975 and hence it probably does not reflect the current situation. However the student responses were more difficult to explain. It is possible that the students were satisfied with their clinical environment and completed the questionnaire in terms of their ability to function in the hospital and not in relation to the academic knowledge required to achieve national certification. Regardless of the reasons that might have caused the incongruence among the indicators of program effectiveness the conclusion was drawn that the Edmonton program when compared to other programs by a national examination was significantly less effective than the other three programs studied.

SUMMARY

This chapter presented a brief description of the NAIT respiratory technology joint cooperative program, a linkage dimensions profile, the degree of program integration and information on the effectiveness of the overall program.

The linkage dimension of formalization revealed that the degree of formalization of the relationship was low or informal. No interorganizational contracts existed and coordination was left to the liaison committee which has limited authority due to the interorganizational nature of the program. Few specific interagency procedures existed hence the procedural standardization indicator was also low. The second linkage dimension examined was the intensity of the relationship which was high on both indicators measured. The final linkage dimension studied was the reciprocity of the relationship which in part examined the power symmetry of the relationship. The degree of exchange among the institutions involved was relatively low and no single institution appeared to dominate. The definitional reciprocity was high although this indicator was not really tapped due to paucity of written interagency procedures and documentation.

The findings on the degree of program integration were essentially the same as the other programs studied. The theoretical and clinical aspects of the program were separate with relatively little interagency visitations occurring. Very little instructional staff interchange occurred although the respondents indicated the hospital instructors "sometimes" teach at the institute. Likewise the amount of equipment exchange among the participating organizations was perceived to be low. Cooperation and communication were generally considered to be good among the program constituents. Of the three integration variables studied the mutual or two-way integration between activities appeared to be higher than either the college contribution to integration or the hospital contribution to integration.

The students of the Edmonton program perceived the effectiveness of the program to be "good" rating seven of the eleven effectiveness items "4" or better on the five-point scale. Consonant with the student perceptions the Canadian Medical Association also rated the program highly at the time of their survey in January 1975. However the program graduates performed very badly on the 1977 national examination with a failure rate of 46.6 percent. The Edmonton graduates' mean scores on both examinations were less than the national means especially on the clinical assessment examination. Overall the Edmonton failures represented 37.8 percent of all failures across Canada. Although there would appear to be considerable incongruence among the indicators of program effectiveness it was considered reasonable to conclude the Edmonton program was significantly less effective than the other three programs studied.

The next chapter presents a comparative analysis of the four programs on the research variables examined.

CHAPTER 9

COMPARATIVE ANALYSIS OF THE PROGRAMS STUDIED

Four joint cooperative programs in two provinces were studied in order to explore the possible relationships between linkage dimensions, the degree of program integration and the overall effectiveness of the programs. Chapters 5 through 8 presented the individual findings for each program studied. This chapter presents the research findings which resulted when the programs were compared with each other.

The chapter is organized into three sections: one on linkage dimensions, the second section on integration and finally a comparison of program effectiveness. A summary of the research findings of each section is provided. No indepth discussion is included in this chapter as Chapter 10 provides a generalizing analysis of the findings of this study.

The linkage dimensions were examined by plotting the data from the linkage profile table for each program onto a single table in an attempt to see if the programs differed on their linkage dimensions. The data on integration and effectiveness were analyzed by analysis of variance using the DERS program ANOVA 15 with the level of significance set a priori at 0.05.

LINKAGE DIMENSIONS

The three major linkage dimensions examined in this study were the depth of formalization, intensity, and reciprocity of the relationship among organizations as identified in four joint cooperative programs. As explained earlier the data on linkage dimensions were gathered by interview and coded using a system developed by the researcher. This treatment of the data presented a linkage profile for each program to be developed. For purposes of comparison each individual program profile was plotted on a single table to permit analysis of the linkage profiles. Table 55 is the result of this endeavor.

Findings

The research findings associated with linkage dimensions are presented in relation to the degree of formalization, degree of intensity, and degree of reciprocity of the relationship among organizations participating in a joint cooperative program.

Formalization. As can be seen from Table 55 both the Alberta programs have identical profiles on all three linkage variables and their attendant indicators. The degree of formalization of the Alberta programs appeared to be tacit and informal relying on the staff of the colleges and affiliated hospitals to perpetuate the relationship. No formal contracts or agreements appeared to exist and formal means of program coordination had not been developed. Since very few written procedures related to coordination and integration of program activities existed the degree of procedural standardization was also considered to be very low.

These findings are in direct contrast with the findings of the Ottawa program and to a lesser degree with the findings of the

Table 55

Summary of Linkage Dimensions Found in the Four Programs

Linkage Dimension	5*	4	3	2	1
A. Formalization of the relationship					
a) Formal agreement (written...informal)	O[1]			L[2]	A[3]
b) Coordination (formal coordinator... informal)	O,L		A		
c) Procedural standardization (high...low)					
i) Liaison committee terms of reference	O,L				A
ii) Advisory committee terms of reference	O				A,L
iii) Coordination procedures	O,L				A
B. Intensity of the relationship					
a) Frequency of interaction (high...low)					
i) Liaison committee meetings	A,O,L				
b) Relative resource commitment (high...low)					
i) College	O,L	A			
ii) Hospitals	A				O,L
C. Reciprocity of the relationship					
a) Resource reciprocity (high...low)					A,O,L
b) Definitional reciprocity (mutual...unilateral)					
i) Liaison committee terms of reference	A,L				O
ii) Advisory committee terms of reference					A,O
iii) Coordination procedures	O,L				A

*Each indicator was rated in accord with a scale that ranged from 5 to 1. The basis for this scale is shown in parentheses following each indicator (e.g., written (5)...informal (1)).

[1] "O" represents the Algonquin College program, Ottawa.

[2] "L" represents the Fanshawe College program, London.

[3] "A" represents the NAIT and SAIT programs whose linkage dimensions were identical.

London program. Algonquin College in Ottawa has established formal agreements with each affiliated hospital in the program. The agreement outlines the basis of the relationship, the responsibilities of the parties involved, the financial disposition of the relationship and other issues such as liability insurance and student benefits. The document examined by the researcher was signed by the senior officers of the organizations involved. The degree of coordination was also considered high because in addition to the formal agreements the college has a full time program coordinator charged with the responsibility of coordinating the various components of the program including the clinical experience at the hospitals. The procedural standardization was also considered high as all procedures, committee terms of reference, and other activities related to interorganizational relationships were very well documented.

The Fanshawe College program in London appeared to fit between the two extremes identified in the Alberta and Ottawa programs on the formalization dimensions. The college had a specific written agreement with one hospital but the relationship was tacit and informal with the other two hospitals. The agreement that did exist was very detailed and covered similar aspects identified in the Ottawa program agreements. The degree of coordination in the London program was considered high as the college provided a full time clinical coordinator responsible for monitoring the clinical experiences at the hospitals. The degree of procedural standardization was variable in the Fanshawe program because some procedures were well documented while others such as the advisory committee terms of reference were non-existent.

Intensity. The research variable "intensity" revealed that the frequency of interaction was high among the constituents of all the programs on the indicator measured. All four programs had clinical liaison committees which met at least once a month. All participating organizations were represented at these meetings.

The second indicator of intensity revealed a different situation. The relative resource commitment was high as far as all the colleges studied were concerned. All provided reasonable laboratory space, a wide variety of related equipment for the laboratories, three full time faculty members and a specific budget for program supplies. In addition the two Ontario colleges paid all the costs related to students' clinical experience at the affiliated hospitals. For example in the 1975-76 academic year Algonquin College paid out $2,475.00 per student in order to cover the costs of the clinical experience. However this procedure in turn appeared to decrease the relative resource commitment of the affiliated hospitals in Ontario. In fact other than allowing the students to use their facilities and interact with their patients and staff the Ontario hospitals did not pay any expenses related to the education of the students in the joint cooperative programs studied. Conversely the affiliated hospitals in Alberta had a high relative resource commitment as they provided a full time instructor, paid any associated educational expenses, and paid students a stipend of $200 per month while they were completing their clinical experience. The Alberta institutes did not provide any monies to the hospitals for providing the clinical experiences.

Reciprocity. The reciprocity of the relationship was measured by examining the degree to which resources were shared or exchanged among the constituents of the programs. The research variable "reciprocity" was difficult to quantify in all the programs studied because there was some variance in the degree of reciprocity between constituents which appeared to be dependent upon other factors not specifically measured such as distance between the institutions involved, work load of faculty members, and perceived need for such exchange. The data on the four programs generally indicated that the degree to which resources were exchanged was low.

The degree of definitional reciprocity which examined the degree to which the terms of the interactions are mutually agreed upon was non-existent or unilateral in the Alberta programs as would be expected when the degree of formalization was also low. Without written procedures, agreements or contracts this variable could not be adequately tapped. The only example of a written procedure that could be examined was the terms of reference for the program advisory committee and in both Alberta programs the documents were drafted unilaterally by the college. Interestingly enough however the Algonquin College program also demonstrated a low degree of definitional reciprocity with the college program coordinator assuming the responsibility for drafting all program related documents with the exception of the formal contract which was signed by both participating organizations. The Fanshawe College program had a high degree of definitional reciprocity on the written procedures that did exist.

The research variable "reciprocity" was considered important as it gave an indication of the power symmetry of the relationship in the programs studied. Viewed from that perspective the Ottawa program appeared to have an asymmetrical relationship with power resting with the college. In the other programs studied although the degree of reciprocity was unilateral on the one indicator examined the relationships appeared symmetrical and no one participating organization seemed to dominate.

Discussion of the findings. The three linkage dimensions as developed in the conceptual framework of Chapter 2 were identified in the four programs studied. The data revealed that the Ottawa program was the most highly formalized of the four programs examined. The London program was less formalized but still clearly higher than the two Alberta programs whose interorganizational relationships appeared tacit and informal. Only one of the two indicators of intensity revealed differences among the programs studied and that difference related to the relative resource commitment of the Ontario participating hospitals which was low compared to the colleges and the Alberta affiliated hospitals. This finding was not surprising since the Ministry of Colleges and Universities of Ontario made funds available to the colleges to pay the clinical experiences provided by the hospitals.

The reciprocity of the relationship was generally low in all four programs as far as exchange of resources was concerned. In contrast the definitional reciprocity was high in the Fanshawe College program but low in the other three programs.

In the Alberta programs this finding could be in part explained by the low formalization and lack of written documents. However in the Algonquin College program where formalization was high, the definitional reciprocity was asymmetrical with the power of the relationship resting with the college. This finding was not unexpected since the Algonquin College provided all necessary funding for the program hence the college controlled a very important resource. This line of reasoning does however raise the question of why the situation was different in the Fanshawe College program. No apparent explanation could be suggested to account for this finding.

DEGREE OF PROGRAM INTEGRATION

Information on the degree of program integration was gathered by means of a 24 item questionnaire developed by the researcher. The questionnaire contained a series of items relating to program activities that were considered to require a high degree of collaboration of effort. The major purpose of the questionnaire was to identify the college contribution to integration, hospital contribution to integration, and the extent of two-way or mutual integration activities.

The data from the four joint cooperative programs were tabulated and a discussion of the findings on integration is presented at the end of this section.

Findings

In order to compare the four programs on the degree of integration, the results of the analysis of variance are presented in relation to the college contribution dimension, the hospital contribution and mutual or two-way integration.

College contribution to integration. The findings on the college contribution to integration are presented as Table 56. Significant differences at the 0.05 level were noted on two of the nine items on this scale. The Fanshawe College program appeared to provide equipment more frequently to its affiliated hospitals than did the Algonquin College program. There were no differences between the other programs on this item. The only other item in which significant differences were noted concerned the frequency that classes were held at the college during the clinical year. On this item the Algonquin College program was clearly different from the other three programs with all the Algonquin College respondents indicating that the students returned to the college 7 or more times during their clinical year. As can be seen from Table 56 the Fanshawe College respondents were in accord in their response to this item and no variance was observed. Hence without any variance within the responses of two of the four programs analysis of variance could not be computed, however the differences on the item were large enough to conclude that differences did exist.

Hospital contribution to integration. Table 57 presents the findings related to the hospital contribution to integration. Eight items constituted the hospital contribution dimension and of these three items revealed significant differences between programs. The NAIT program differed from the Fanshawe College program in that the participation of the NAIT hospital instructors was significantly higher in the determination of the college curriculum than was the participation of the Fanshawe College hospital instructors. No differences were

Table 56

Comparative Analysis of the College Contribution Dimension

Item	Program:	Fanshawe	Algonquin	SAIT	NAIT	Results of ANOVA
	n	7	12	12	10	
In the preparation of final hospital examinations assistance is received from the college instructors:	x̄ SD	1.85[1] 0.89	1.91 1.31	1.90 0.70	2.70 1.05	NS
In the determination of the course content for the hospital portion of the program input is received from the college instructors:	x̄ SD	2.85[1] 1.21	2.66 1.37	3.27 0.90	3.66 0.70	NS
How frequently is equipment provided by the college for the hospital components of the program?	x̄ SD	2.85[1] 0.69	1.75 1.05	2.66 0.77	1.90 0.73	2-1
In general, how often do college instructors actively teach in the hospital portion of the program?	x̄ SD	1.42[1] 0.53	1.54 0.93	1.50 0.79	1.80 0.63	NS
How frequently do college instructors visit the hospital on a regular basis for the purpose of gaining clinical experience?	x̄ SD	1.85[2] 0.37	1.81 1.25	1.63 0.67	2.50 1.26	NS
In general, how well does the theoretical knowledge presented in the first year relate to the practical application of that knowledge during the clinical year? Relationship is:	x̄ SD	3.00[3] 0.81	3.16 0.83	3.30 0.92	3.70 0.48	NS
To what extent are the laboratory procedures as taught during the first year relevant to the practical procedures of year two? Relevancy is:	x̄ SD	3.42[3] 0.53	3.54 0.63	3.27 0.90	3.60 0.51	NS
How often are classes held at the college during the clinical year for students of participating hospitals?	x̄ SD	2.00[2] 0.0	5.00 0.0	1.09 0.30	1.50 1.26	1-3,3-2,4-2
When changes are made to the routines, procedures or equipment in one part of the program (college or hospital) how quickly are these changes communicated to participants in the other part of the program (hospital or college)? Speed of communication from the college to the hospital is:	x̄ SD	3.14[3] 0.69	3.18 0.98	3.09 0.83	3.80 0.42	NS

[1] The scale used for these items was: 1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often; 5 = Frequently.

[2] The scale used for these items was: 1 = Never; 2 = 1 or 2 times/year; 3 = 3-4 times/year; 4 = 5-6 times/year; 5 = 7 or more times/year.

[3] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

Table 57

Comparative Analysis of the Hospital Contribution Dimension

Item	Program:	Fanshawe	Algonquin	SAIT	NAIT	Results of ANOVA
	n	7	12	12	10	
In the preparation of the final college examinations assistance is received from the hospital instructors:	$\bar{x}$ SD	2.71[1] 0.75	2.08 1.67	1.90 1.22	2.10 1.19	NS
In the determination of the course content for the college portion of the program input is received from the hospital instructors:	$\bar{x}$ SD	2.71[1] 0.75	3.50 1.08	3.27 0.78	4.00 0.50	1-4
How frequently is equipment provided by the hospital for the college components of the program?	$\bar{x}$ SD	2.42[1] 1.13	2.91 1.24	2.50 0.79	2.70 0.67	NS
In general, how often do hospital instructors actively teach in the college portion of the program?	$\bar{x}$ SD	2.00[1] 0.81	1.72 1.27	1.50 0.67	3.00 0.47	2-4, 3-4
How frequently do hospital instructors participate in inservice programs or professional development activities at the college?	$\bar{x}$ SD	1.42[1] 0.78	2.00 0.89	1.91 0.66	2.00 0.94	NS
In general, how often are hospital visits held during the first year of the program?	$\bar{x}$ SD	2.00[2] 0.0	3.50 1.44	5.00 0.0	4.50 0.97	1-3, 1-4
During the first year of the program how adequate are the planned hospital visits in reinforcing the theoretical learnings of the first year? Adequacy is:	$\bar{x}$ SD	2.71[3] 0.75	3.11 0.60	3.25 0.75	3.50 0.70	NS
When changes are made to the routines, procedures or equipment in one part of the program (college or hospital) how quickly are these changes communicated to participants in the other part of the program (hospital or college)? Speed of communication from the hospital to the college is:	$\bar{x}$ SD	2.71[3] 1.11	3.36 1.12	3.00 0.77	3.00 0.81	NS

[1] The scale used for these items was: 1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Rarely; 5 = Frequently.

[2] The scale used for this item was: 1 = Never; 2 = 1 or 2 times/year; 3 = 3-4 times/year; 4 = 5-6 times/year; 5 = 7 or more times/year.

[3] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

noted between the NAIT program and the other two programs. On the item that asked the frequency that hospital instructors teach at the college two differences were observed. The NAIT program respondents rated the item significantly higher than did the Algonquin College respondents and the SAIT respondents. No differences were found between the NAIT program and the Fanshawe College program on this particular item. The last item in which differences were observed concerned frequency of hospital visits during the first year of the program. On this item the Fanshawe College program was rated significantly lower than the NAIT and SAIT programs. As can be seen from the table no variance was recorded by the respondents on two programs hence the analysis of variance statistical procedure was inappropriate, however the differences on the five-point scale were large enough to conclude that these differences were significant. There is some question as to whether or not significant differences existed between the Algonquin College program and the SAIT program on this particular item however examination of the data from the Algonquin College program respondents indicated that the mode was "5" on the five-point scale. Since the modal response for the SAIT program respondents was also "5" these findings suggest that significant differences were unlikely between the two programs.

Five of the eight items that constituted the hospital contribution to integration dimension revealed that no significant differences appeared to exist among the four programs studied. These findings suggest that all the affiliated hospitals examined made similar contributions to the integration of the joint cooperative programs.

Mutual or two-way integration. The findings on mutual or two-way integration activities were tabulated and are presented in Table 58. Seven items constituted the mutual or two-way integration dimension and significant differences were noted on four items. The NAIT program was rated significantly higher than the Fanshawe College program on the perceived effectiveness in utilizing available resources. No differences were observed between the NAIT program and the other two programs. The NAIT program was perceived as being significantly higher than the SAIT program on the adequacy of lines of communication but not statistically different from either the Algonquin College program or the Fanshawe College program. On the item related to the adequacy of joint problem-solving capabilities the NAIT program again differed significantly from the Fanshawe College program at the 0.05 level. No statistically significant differences were observed between the other two programs. The final item on the mutual integration dimension was intended to be a global measure of integration of the joint cooperative program. On this item the NAIT program was rated significantly higher than the Fanshawe College program and the SAIT program. No differences existed between the NAIT program and the Algonquin College program.

Discussion of the findings. Significant differences were noted on nine of the 24 integration items. However on only a single item was one of the programs found to differ significantly from the other three. Responses to that item revealed that in the Algonquin College program students returned to the college during their clinical year seven or more times, a significantly higher number than for the other three programs.

Table 58

Comparative Analysis of the Mutual Interaction Dimension

Item	Program:	Fanshawe	Algonquin	SAIT	NAIT	Results of ANOVA
	n	7	12	12	10	
The college program head and the hospital student coordinator (instructor) communicate (other than at committee meetings):	$\bar{x}$	3.85^{1}	3.27	2.81	3.35	NS
	SD	1.06	1.10	0.75	0.94	
College/hospital instructional staff communicate (other than at committee meetings):	$\bar{x}$	3.42^{1}	3.18	3.36	3.80	NS
	SD	1.39	1.07	0.50	0.78	
How much consultation is there between the college and hospital staff in the selection of students for the program? Consultation occurs:	$\bar{x}$	3.28^{1}	3.75	4.00	3.60	NS
	SD	1.49	1.71	1.18	0.96	
How effective is the present college/hospital relationship in permitting maximum utilization of available resources (people, time, money, etc.) from the various participants of the program? Effectiveness is:	$\bar{x}$	2.28^{2}	3.33	2.58	3.50	1-4
	SD	1.11	0.88	0.99	0.97	
How adequate are the lines of communication between the college and hospital in assisting the overall program to keep current with the latest developments? Adequacy is:	$\bar{x}$	3.28^{2}	3.81	3.16	4.00	3-4
	SD	0.48	0.87	0.71	0.81	
From time to time, program related problems arise which require some kind of joint-problem solving activity. How adequate is the relationship between the college and hospital in coping with program related problems as they arise? Adequacy is:	$\bar{x}$	3.00^{2}	4.30	3.90	4.40	1-4
	SD	0.81	0.67	0.83	0.69	
In general, how would you rate the integration of the hospital and college components of the program? Integration is:	$\bar{x}$	3.00^{2}	3.45	3.00	3.90	1-4, 3-4
	SD	0.57	0.82	0.42	0.56	

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[1] The scale used for these items was: 1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often; 5 = Frequently.

[2] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

Although the NAIT program was rated significantly higher than at least one other program on seven of the nine items where differences were noted, the program did not differ with all three programs on any given item. However it was rated as significantly different from each of the other programs at least once. An examination of the seven items for which NAIT was rated higher than at least one other program revealed that three hospital integration activities of the NAIT program were identified as being significantly different from at least one other program. These findings suggest that the hospitals affiliated with the NAIT program contributed to integration by permitting the active participation of their clinical instructors in the theoretical portion of the program. Additionally the Edmonton hospitals made their facilities available to first year students on a frequent basis. The second cluster of items in which the NAIT program was rated higher than the other three programs were the mutual or two-way integration activities. These items included:

a) Adequacy of utilization of available resources

b) Adequacy of lines of communication

c) Adequacy of the relationship for problem-solving activities

d) Overall rating of program integration.

The findings on the mutual integration activities were consonant with the findings on the hospital contribution dimension. Apparently the communication and cooperation among the constituents of the NAIT program were good resulting in a high perceived degree of integration.

Overall the findings on integration suggested that no single program differed significantly from the others but that differences existed on specific items as reported. When the study was conceptualized conventional wisdom suggested that differences in integration activities could be identified and the degree of integration would result in a particular pattern of linkage dimensions. This did not appear to be the case in the four programs studied. One reason that differences in integration activities could not be readily identified could be with the lack of sensitivity of the research instrument although individual program differences were identified on nine integration items. A more plausible explanation was found during the analysis of the Canadian Medical Association accreditation reports. Three of the four programs studied were inspected by the accreditation team on at least two occasions. Upon completion of the first inspection the programs were given a list of recommendations that the inspectors felt would improve the program. The accreditation report analysis revealed that a number of recommendations made concerned integration activities. In addition the application form for accreditation asked specific questions on integration hence the integration activities of the programs could have been shaped by the Canadian Medical Association accreditation process.

Notwithstanding the above comments the NAIT program did appear to be rated higher on the hospital contribution to integration dimension and the mutual integration activities than some of the other programs studied. These findings suggest that the personnel of the NAIT program were more closely integrated than the others however no specific reason could be identified to explain the differences.

PROGRAM EFFECTIVENESS

Information on program effectiveness was gathered from three sources: an 11 item effectiveness questionnaire completed by the senior students of the program; the Canadian Medical Association accreditation reports; and finally the performance of the senior students on the 1977 national registration examination of the Canadian Society of Respiratory Technologists.

Findings

In order to compare the effectiveness of programs the findings from the three sources cited above were each treated separately. Then the three indicators of program effectiveness were compared and discussed.

Student perceptions of program effectiveness. The program effectiveness instrument was composed of 11 items with two items concerned with first year effectiveness, four directed at the effectiveness of the second or clinical year and five items concerned indicators of overall program effectiveness. The data on the first and second year effectiveness of the four programs were tabulated and presented as Table 59. The findings on first year effectiveness revealed that the NAIT program was perceived to be more effective than the SAIT program on both items. In addition the NAIT program was perceived to be more effective than the Algonquin College program as far as the effectiveness of the first year laboratory exercises was concerned.

The second year effectiveness findings indicated that there were significant differences among the programs on two of the four indicators of second year effectiveness. On the item that was concerned

Table 59

Comparative Analysis of the First and Second Year Effectiveness Items[1]

Item	Program:	Fanshawe	Algonquin	SAIT	NAIT	Results of ANOVA
	n	7	13	19	23	
First Year Effectiveness:						
How adequate was the college portion of the program in providing you with the theoretical knowledge necessary for the practice of respiratory technology?	$\bar{x}$	3.42	3.69	3.42	4.08	3-4
	SD	0.97	0.75	0.96	0.59	
How relevant were the first year laboratory exercises in developing operational skills for equipment used in respiratory technology?	$\bar{x}$	3.33	3.07	2.78	4.00	2-4,3-4
	SD	0.51	0.75	0.85	0.69	
Second Year Effectiveness:						
How adequate was the clinical experience in allowing you to develop the skills necessary to practice respiratory technology?	$\bar{x}$	4.00	4.23	4.52	4.34	NS
	SD	0.57	0.59	0.61	0.77	
How would you describe the variety of clinical experiences provided during the second year?	$\bar{x}$	3.71	3.84	4.68	4.63	1-3,1-4,2-3,2-4
	SD	0.95	1.06	0.47	0.49	
In general, how would you rate the clarity of explanation on how clinical experiences are to be carried out?	$\bar{x}$	3.57	3.23	3.84	3.86	NS
	SD	0.53	0.83	0.83	0.77	
In general, how well was first year learning reinforced during the second year?	$\bar{x}$	2.57	3.69	3.78	3.56	1-2,1-3,1-4
	SD	0.78	0.75	0.53	0.89	

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[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

with the variety of clinical experiences provided in the second year both the NAIT and SAIT programs were rated signficantly higher than the two Ontario programs. The other item which revealed significant differences was concerned with the degree to which first year learning was reinforced during the second year. On this item the Fanshawe College program was rated significantly lower than the other three programs.

The findings on the global effectiveness of the four programs studied were tabulated and are presented as Table 60. Four of the five global effectiveness items revealed some differences among the programs studied. On the item concerned with the quality of instruction the NAIT program was perceived as being more effective than both the Fanshawe College and Algonquin College programs. No differences were observed between the NAIT and SAIT programs on quality of instruction. In terms of the perceived student stimulation afforded by the program the NAIT program again was rated significantly higher than both the Fanshawe College and Algonquin College programs. Another global indicator of program effectiveness was concerned with the degree to which the students would recommend their program to a close friend or relative. Both the NAIT and SAIT programs were rated significantly higher than the Fanshawe College program. No differences were noted between the other three programs on this item. The final item on the global effectiveness scale was considered to provide an overall assessment of program effectiveness. On this item the only significant difference noted was between the Fanshawe College and SAIT programs with the SAIT program being rated higher.

Table 60

Comparative Analysis of Global Effectiveness Items

Item	Program: n	Fanshawe 7	Algonquin 13	SAIT 19	NAIT 23	Results of ANOVA
In general, how would you rate the quality of instruction you received during the total program?	$\bar{x}$	3.00[1]	3.15	3.57	4.04	1-4,2-4
	SD	1.00	0.68	0.76	0.47	
In general, how stimulating has the total program been?	$\bar{x}$	3.28[2]	3.15	3.78	4.08	1-4,2-4
	SD	0.75	0.55	0.78	0.59	
From time to time job related problems arise which require trouble shooting skills such as in the case of ventilator failure. How well did the program prepare you to handle such problems?	$\bar{x}$	3.28[1]	3.84	3.73	3.68	NS
	SD	0.95	0.37	1.04	0.83	
Would you recommend the program you are experiencing to a close friend or relative if they were interested in pursuing a career in respiratory technology.	$\bar{x}$	1.71[3]	2.61	3.15	3.40	1-3,1-4
	SD	0.75	1.19	0.95	1.18	
In general, how would you rate the overall effectiveness of the total two year program?	$\bar{x}$	3.28[1]	3.75	4.1	4.0	1-3
	SD	0.48	0.62	0.73	0.61	

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[1] The scale used for these items was: 1 = Very poor; 2 = Poor; 3 = Fair; 4 = Good; 5 = Excellent.

[2] The scale used for this item was: 1 = Boring; 2 = Dull; 3 = Fairly stimulating; 4 = Stimulating; 5 = Very stimulating.

[3] The scale used for this item was: 1 = Not recommend; 2 = Recommend with reservations; 3 = Recommend; 4 = Highly recommend; 5 = Very highly recommend.

Canadian Medical Association evaluation. Since all the programs studied had received full accreditation status from the Canadian Medical Association within the past three years it was assumed that no significant differences existed between the programs in terms of this particular form of evaluation.

Results of the 1977 registration examination. The performance of the senior students of each program studied on the national registration examination of the Canadian Society of Respiratory Technologists was tabulated and presented as Table 61. The examination process consisted of a 260 item multiple choice examination and a latent image branching logic clinical assessment examination. The analysis of variance test indicated that the NAIT program students performed significantly less well than did the students of the other three programs on both aspects of the examination. Not only did the NAIT students do poorly when compared to the students of other programs studied but overall 46.6 percent of the NAIT students failed to become certified.

Table 61

Results of the 1977 Registration Examination

Program	n	Multiple Choice Examination $\overline{X}$	Multiple Choice Examination SD	Latent Image Examination Mean	Latent Image Examination SD	Student Failures
Algonquin College	17	181	21	581	228	2
Fanshawe College	20	180	15	538	154	0
SAIT	23	169	24	531	200	4
NAIT	30	162	21	215	225	14

Discussion of the findings. Although the perceptual data on program effectiveness did not reveal that one program was more effective than all the others some trends could be identified. For example when the data were reordered in terms of highest and lowest ratings on significantly different items the NAIT program was rated highest on seven of the eight items where significant differences were noted between programs. The Calgary program was rated highest on four items but also rated the lowest on two items. The Algonquin College program was rated highest on one item and lowest on four items. Finally the Fanshawe College program was rated the lowest on six items. This data treatment suggested that the NAIT program was perceived as the most effective of the four programs studied with the Fanshawe College program perceived as the least effective.

As indicated previously since all four programs were fully accredited by the Canadian Medical Association no specific differences could be identified by that indicator of effectiveness. However the results of the 1977 registration examination did provide some interesting data which were in direct contrast with the findings of the perceptual data on program effectiveness. On the national examination the NAIT program students performed significantly more poorly than those of any other program studied yet these same students perceived their program to be the most effective. A cursory analysis would suggest that this finding gives credence to the old adage "ignorance is bliss"! However a more plausible explanation is that the two indicators of effectiveness used in this study examined different facets of effectiveness. The perceptual questionnaire tapped global areas of program effectiveness such as quality of instruction and the degree of stimulation afforded by the program and could be interpreted as a measure of program satisfaction; whereas the performance of students on a national examination was a measure of program productivity. Hall (1977:67) commented that effectiveness is a problematic issue because organizations have multiple and conflicting goals which place constraints on the degree to which an organization can be effective on different measures of effectiveness. Organizations may be effective on one specific measure but ineffectual or dangerous on another. The findings on program effectiveness provide tentative support for the explanation posited by Hall. These results will be expanded upon in Chapter 10 where a generalizing analysis of the findings is presented.

SUMMARY

This chapter presented a comparative analysis of the four programs studied on linkage dimensions, degree of program integration and program effectiveness

The data on linkage dimensions revealed that the degree to which the programs were formalized was the linkage dimension where the greatest differences were noted. The most formal program was the Algonquin College program in Ottawa while the Alberta programs exhibited tacit and informal relations. The Fanshawe College program was between the two extremes noted however the program was fairly formalized in terms of linkage. The linkage indicators for assessing intensity revealed that all program participants had a high degree of commitment to the program in terms of liaison committee meetings and communication.

However the affiliated Ontario hospitals demonstrated a lower degree of relative resource commitment than did the affiliated Alberta hospitals. The final linkage dimension examined was concerned with the reciprocity of the relationship and the information gathered indicated that the degree of exchange among the organizations involved in the joint cooperative program was low. Another indicator of reciprocity was the definitional reciprocity and the Algonquin College program was perceived as the originator of all documents related to interorganizational activities of the program hence definitional reciprocity was low. This finding implies that the power among the organizations involved in the Algonquin program tends to rest with the college. The information on the Alberta programs on this indicator was sparse because they had little documentation available on interorganizational relations. The Fanshawe College program demonstrated high definitional reciprocity on the documentation available.

The findings on the degree of program integration did not identify major differences among the programs studied. Twenty-four items on integration were examined and only nine significant differences emerged using the analysis of variance test. The differences on the nine items tentatively suggested the NAIT program was better integrated as far as the hospital contribution to integration and the mutual or two-way integration activities were concerned.

The final section of this chapter dealt with indicators of program effectiveness. No differences were identified by the Canadian Medical Association evaluation process as all programs were fully accredited. The perceptual data on program effectiveness revealed that the NAIT students perceived their program to be most effective of the four programs studied in terms of the global indicators of effectiveness. Performance on the national examination however indicated that the least effective program was also the NAIT program. Hierarchical ordering of the program in terms of national examination performance indicated the Algonquin College program students performed best, followed by the Fanshawe College program, then the SAIT program, and finally the NAIT program.

The next chapter provides a generalizing analysis of the findings so that any emerging trends or specific research findings can be presented in accord with the theory and conceptual framework developed in Chapter 2.

CHAPTER 10

GENERALIZING ANALYSIS FROM FOUR PROGRAMS

This chapter provides a discussion of the findings reported in Chapters 5 to 8 on linkage dimensions and their attendant indicators, the degree of program integration and the effectiveness of the four joint cooperative programs studied. This review is presented against the theoretical background and review of the literature contained in Chapter 2.

Since one purpose of this study was to develop some generalizations about joint cooperative programs the analysis of this chapter conforms to the second type of empirical analysis for a case study posited by Lipset, *et al*. (1970:169):

> a) Description and explanation of the single case, to provide information concerning its present state, and the dynamics through which it continues as it does. This may be called a *particularizing* analysis.
>
> b) The development of empirical generalization or theory through the analysis of a single case, using it not only to discover anything about *it* as a system but as an empirical basis either for generalizations or theory construction. This may be called a *generalizing* analysis.

In their discussion Lipset, *et al*. (1970:169) stated that: ". . . better examples of the second type can be given if the analyses under consideration are not restricted to a single case analysis, as we have restricted them."

This chapter thus attempts to provide a generalizing analysis of the findings from four joint cooperative programs.

The chapter is organized in relation to the sub-problems outlined at the beginning of Chapter 3 commencing with a discussion on linkage dimensions.

LINKAGE DIMENSIONS

Considerable discussion was provided in Chapter 2 on interorganizational linkages and the conceptual framework developed by Marrett (1971). In her discussion of interorganizational dimensions Marrett (1971:95) postulated two models that could exist which predict specific relationships among the linkage indicators. The models represent two different interorganizational linkage models, one, characterized by a low degree of formalization, standardization and intensity, and a second model characterized by a high degree of formalization, standardization and intensity. According to Marrett (1971:97) joint cooperative programs should conform to the second model however she suggests that the second model is unlikely because organizations are hesitant to make the kinds of investments and commitments required by such a model.

An examination of the linkage variables of formalization, intensity and reciprocity suggests that certain indicators appear to be related to or place constraints upon others thus some value should be derived from an exploration of the possible interaction of the linkage variables. For example should a joint cooperative program require large resource investments then one could anticipate the existence of formal agreements, standardization of procedures and high reciprocity among the organizations involved. Organizations are unlikely to allocate resources when details of the interaction are tacit and informal, methods of exchange unspecified, and benefits of the relationship uncertain. Marrett (1971:96) further commented that the degree of coordination is important as is the relative resource commitment made by an organization. If the degree of structural standardization (coordination) is high then it is likely that the program would draw heavily on organizational resources but as previously stated it is likely that organizations would be reluctant to commit such resources without formal consent. However as the formalization of the interorganizational relationship increases the freedom of choice, innovation, and the rate of change tend to decrease (Hall, 1972). Guetzkow (1966) expressed the view that formal contracts or agreements are perceived as reducing organizational autonomy hence are unlikely unless organizations are pushed into developing such contracts.

Closely related to contractual formalization is the degree of formal coordination. If a program does not have a formal agreement among the participating institutions then coordination and procedural standardization are also likely to be low. A high degree of coordination is unlikely in a tacit, informal relationship. Further, the logic is compelling that if contractual formalization and procedural standardization are low then the indicator of definitional reciprocity should be very difficult to measure.

A number of writers have also discussed the importance of the power dependency or dominance found in interorganizational relationships. According to Schmidt and Kochan (1977:220) the motivation for organizations to enter into interorganizational relationships is often asymmetrical whereby one party is motivated to interact while the other is not. Hence the relative resource commitment of participating organizations should be related to the symmetry or reciprocity of the relationship.

The discussion thus far has identified that a number of different linkage dimensions could exist depending on the constraints one dimension might place on another. It is the purpose of this section of the chapter to examine the findings on the linkage dimensions to see if any of the interrelationships identified above can be delineated in this particular study of four joint cooperative medical programs.

Findings

The linkage profiles for the four programs studied were developed utilizing the answers to the sub-problems outlined at the beginning of Chapter 3 and restated below:

Linkage Dimensions

1.0 Formalization

  1.1 To what degree was the official sanction for the continuance of the program formalized?

  1.2 To what extent were program coordination activities formalized?

  1.3 To what extent were program liaison activities clearly delineated?

2.0 Intensity

  2.1 What is the frequency of interaction among the program constituents?

2.2 What is the relative resource commitment of the participating institutions?

3.0 Reciprocity

3.1 To what degree are resources mutually exchanged?

3.2 To what degree were the terms of the relationship mutually agreed upon?

An analysis of the findings revealed some interesting information on linkage dimensions and interorganizational relationships. The findings are presented in relation to each of the three major linkage dimensions although where necessary comment is made on other variables which appear important.

Degree of formalization. The degree of formalization was found to be high on all three formalization indicators in the Algonquin College program. The Fanshawe College program was less formalized however it was considerably higher than the NAIT and SAIT programs whose interorganizational relationships were characterized by tacit, informal relations.

Both the Ontario programs had formal agreements with at least one affiliated hospital and both had formal program coordinators with specified responsibilities. Coordination and procedural standardization were also high in both Ontario programs.

Degree of intensity. All four programs indicated a high frequency of interaction however differences were observed in the relative resource commitment of the participating organizations. Examination of the linkage information revealed that the relative resource commitment, although high in all four colleges involved in the study, was higher in the Ontario colleges as they paid all expenses related to the clinical experience. Conversely, the relative resource commitment of the affiliated Ontario hospitals was low while the affiliated Alberta hospitals indicated a high relative resource commitment.

Degree of reciprocity. The information on all four programs indicated that little exchange of resources occurred among the participating organizations. The degree of definitional reciprocity in the Algonquin College program was low with the college personnel originating most interorganizational procedures. Few interagency procedures or agreements existed in the Alberta programs hence this dimension was difficult to tap. On the one indicator examined in the Alberta programs the definitional reciprocity was low with the college personnel drafting the document. Definitional reciprocity was found to be high in the Fanshawe College program.

Discussion of the Findings

The findings of this study provide support for Marrett's (1971) contention that the characteristics of her second interorganizational model are unlikely to exist due to the kinds of investments and commitments that organizations would have to make. None of the four joint cooperative programs studied had the characteristics she proposed for her second model. The Algonquin College program demonstrated the majority of characteristics postulated except the relative resource commitment was asymmetrical among the participating organizations. This asymmetrical relationship in turn appeared to affect the definitional reciprocity because the organization that provided the most resources for the program tended to dominate the activities related to definitional reciprocity. Hence one variable that appears to affect the realization of Marrett's (1971) second interorganizational model is the symmetry of the relative resource commitment of the participating organizations.

The symmetry of the relative resource commitment is not the only variable that has implications for Marrett's model. Both the NAIT and SAIT programs demonstrated symmetrical resource commitments among the participating organizations but in turn the relative formalization of the program was low. This finding raises the question of the possible relationship between resource symmetry, the degree of resource commitment and formalization. The resource commitment could by symmetrical but low hence the necessity for formalization is also likely to be low. In the two Alberta programs although the resource commitment to the program was high within each organization no funds or other specific resource exchanges occurred among the participating organizations. It would appear that the major resource exchanged in the Alberta programs was students. This discussion suggests that not only is the symmetry of the relative resource commitment important but the extent of the commitment is critical. If the resource commitment is high it is unlikely that organizations would permit the use of resources without formal agreements. From this discussion and examination of the findings of the four programs studied a first tentative generalization might be formulated:

> *If a joint cooperative program is characterized by a high relative resource commitment and the resource commitment is symmetrical then the cooperative program is likely to be characterized by high formalization and definitional reciprocity.*

This generalization suggests that should the relative resource commitment of a joint cooperative program be asymmetrical then it is unlikely that the characteristics of Marrett's second model would be identified. However some variations of her second model can exist as demonstrated in the findings of the Ontario programs. The relative resource commitment in the Algonquin College program was high for the college but asymmetrical for the total program. Additionally the degree of formalization was high. A similar situation existed in the Fanshawe College program but to a lesser extent. From these observations a second tentative generalization might be:

> *If one organization engaged in a joint cooperative program has a high relative resource commitment then the cooperative program is likely to be characterized by high formalization and structural standardization (coordination).*

This generalization suggests a corollary in that if one organization dominates in terms of the relative resource commitment the following should hold true:

> *If a joint cooperative program demonstrates an asymmetrical relative resource commitment then the cooperative program is also likely to demonstrate low definitional reciprocity.*

This corollary was only partially supported by the findings however it warrants further investigation.

The findings from the Alberta programs not only provided support for the above stated generalizations but suggested another. Both Alberta programs had tacit, informal relations, low resource exchange and the relative resource commitment was symmetrical. From this a third generalization:

> *If a joint cooperative program is characterized by a symmetrical relative resource commitment and the resource exchange is low then the cooperative program is likely to be characterized by low formalization and structural standardization (coordination).*

These generalizations derived from the findings suggest the key variables that determine the pattern of linkage dimensions are the degree of relative resource commitment and the symmetry of the resource exchange. Support for this conclusion is found in the work of Schmidt and Kochan (1977) and the exchange theory of Levine and White (1961). Others have reported similar findings.

Although the degree of relative resource commitment and degree of resource exchange appear to be the major determinants of linkage patterns within joint cooperative programs other relationships among linkages can be identified. The findings of this study indicate that agreement formalization and structural standardization (coordination) appear to be directly related. If formal agreements exist then coordination is likely to be high. Further if structural standardization is high then it is likely that procedural standardization would also be high. From this a fourth generalization:

> *If a joint cooperative program is characterized by a high degree of agreement formalization then the cooperative program is likely to be characterized by high structural and procedural standardization.*

One note of caution on this generalization. If the formal agreement is very detailed among participating organizations then the structural and procedural standardization might be rendered unnecessary as the agreement could define both structure and procedures. Hall et al. (1977:470) in a recent study on patterns of interorganizational relationships also posited that formal agreements, when established, have the effect of reducing interorganizational issues such as personnel competency, performance, and compatibility of operating philosophy although power still appears operative in these situations. This finding by Hall et al. (1977) suggests that if formal agreements are established then the linkages among the organizations becomes a mandated relationship rather than a voluntary one hence the agreement is the dominant linkage dimension. Notwithstanding this finding the relative resource commitment and the symmetry of resource exchange appear to be determinants of whether or not formal agreements will be developed.

The final finding related to linkage dimensions was the high frequency of interaction found in all four programs. Since no differences were identified in the programs studied no specific generalizations were developed on the frequency of interaction. However the findings of Schmidt and Kochan (1977:222) in a related study offer some insight into the implications of the findings. They reported that "the greatest frequency of interaction will occur when both organizations perceive benefits from interacting . . ." This finding would suggest that all participating organizations studied perceived benefits from the joint cooperative program.

What emerges from the discussion and analysis of the findings from the four joint cooperative programs studied is the impression that certain linkage variables are more interrelated than others. A major limitation of this study was that only four programs were studied; however the findings permitted a number of generalizations to be developed based on an analysis of the four case studies. Further research is needed to test the applicability and validity of these generalizations within joint cooperative programs.

DEGREE OF PROGRAM INTEGRATION

In the conceptual framework developed in Chapter 2 it was conjectured that if different linkage dimensions were identified among the programs studied then a particular linkage profile might be related to a specific pattern or degree of program integration. Integration was defined as collaboration of effort among program participants. Three integration dimensions were developed in an attempt to capture the collaboration of effort that could exist in a joint cooperative program. The three dimensions were the college contribution to integration, the hospital contribution to integration and the mutual or two-way integration activities.

Findings

No single program emerged as being significantly different from the other three programs. As alluded to in Chapter 9 this finding could be attributed to the lack of sensitivity of the research instrument or the influence of the Canadian Medical Association evaluation process on program integration activities. Specific differences were identified on nine integration items and the findings indicated that one program appeared to be rated higher than at least one other program studied on the hospital contribution to integration dimension and the mutual or two-way integration activities.

Discussion of the Findings

The lack of differences as measured by the research instrument on the degree of integration of the four programs studied negated any possible exploration of a relationship between a specific linkage dimension profile and the degree of integration of the joint cooperative program. However one possible relationship could exist and explain the lack of differences found. The one linkage dimension that was similar in all four programs studied was the frequency of interaction which was found to be high. Since the representatives of the organizations involved interacted frequently at liaison committee meetings and appeared to perceive mutual benefit from the interorganizational relationship conventional wisdom suggests that the collaboration of effort among the four programs would be high. This was not found to be the case. An examination of the integration activities delineated in the questionnaire revealed a number of differences among the items. Some items were rated high while some were also rated low on the five-point scale for all four programs. A number of the items that were rated low included those questions that related to personnel exchange among the participating organizations. Only one program was found to be significantly higher than the others as far as interagency visitations were concerned. Most of the differences identified on the integration dimension were between the Fanshawe College program and the NAIT program.

Overall the interesting finding is that, in general, the programs did not differ significantly on integration activities. It may be that the frequency of interaction is positively related to degree of integration. Another possibility however is that the frequency of interaction and the degree of integration tap the same dimension. One could be an extension of the other. Care was taken in the research design to separate the measures of frequency of interaction and the degree of integration; however more study is required to ascertain if these two concepts are different or merely labels for the same factor. A recent study by Schmidt and Kochan (1977:228) on interorganizational relations indicated that the frequency of interaction, extent of formalized agreements, influence of the other organizations, importance of other organizations, and goal compatibility of the organizations represent a factor which describes a cooperative relationship in which the members of participating organizations are intrinsically motivated to interact. This particular finding further raises the question concerning the difficulty of separating interorganizational linkage measures and degrees of integration.

PROGRAM EFFECTIVENESS

When the study was initially conceived with interorganizational linkages the major focus, a question was raised about the criteria to be used to assess the impact of a given linkage dimension profile on joint cooperative programs. One important criterion selected was the effectiveness of the joint cooperative program. A major limitation in attempting to relate a given linkage dimension profile to program effectiveness was the number of variables that have obvious impact on program effectiveness regardless of the linkages between the participating organizations. Another limitation was the difficulty of measuring program effectiveness. In order to control some of the variables that could affect program effectiveness only joint cooperative programs that were fully accredited by the Canadian Medical Association were selected for inclusion in the study. Further, information was gathered on a number of personal and demographic variables from the student respondents. These variables were cross-tabulated by program and the chi square statistic revealed that no significant differences existed on the selected personal and demographic variables. A similar approach was taken with the faculty respondents and no significant differences were noted among the faculty members of the programs studied. Notwithstanding the above any relationship imputed between a given linkage dimension profile and program effectiveness is tenuous at best, however a number of implications for further study could be identified and are presented below.

Three measures of program effectiveness were selected for inclusion in this study. First, an 11 item questionnaire was developed using global measures of effectiveness. Second, the reports of the Canadian Medical Association accreditation surveys were examined. Finally the results of the 1977 registration examination written by students of the programs were obtained.

Findings

Student perceptions of program effectiveness. The student questionnaire information revealed that a number of differences between programs existed on the items measured. Although no single program was significantly different on all 11 items from the other three programs studied some differences were identified by hierarchically ordering the data. Hierarchical ordering was achieved by examining the number of times a given program was perceived as being significantly different from at least one other program. On this basis the NAIT program was perceived as the most effective followed by the SAIT program, the Algonquin program and the Fanshawe College program.

Canadian Medical Association evaluation. All the programs studied were fully accredited by the Canadian Medical Association and no specific differences could be identified upon examination of the survey reports.

1977 Registration examination results. The results of the 1977 registration examination for the four programs included in the study revealed that the most effective program was the Algonquin College program followed by the Fanshawe College program, the SAIT program and the NAIT program. The NAIT program students performed significantly less well than did the students in the other three programs on both aspects of the registration examination.

Discussion of the Findings

The findings on program effectiveness raised a problematic issue concerning measures of effectiveness. One program which was rated highly by the students in terms of perceived effectiveness was in actuality the lowest in terms of student performance on a national examination. Hall (1977:67) commented that, because organizations have multiple and at times conflicting goals, an organization can be effective on one measure but ineffective on another. Steers (1976: 52) placed the effectiveness issue in focus with the question "Are the assessment criteria related positively with each other?" He contended that the use of multiple criteria for measuring effectiveness often lead to situations in which these criteria are in conflict. For example, productivity and job satisfaction are two criteria often examined and are not dissimilar to measures of effectiveness used in this study. Productivity can be increased by pressuring employees or students to produce a greater output, however the increased pressure is likely to reduce job satisfaction. Conversely, job satisfaction can be increased by more leisure time and reduced production pressures, but at the expense of productivity. Steers (1976:52-53) concluded, "Thus, while the use of multiple evaluation criteria adds breadth to any assessment attempt, it simultaneously opens the door to conflicting demands that management may not be able to satisfy."

A review of the literature on program effectiveness indicated that program evaluators are in agreement that multiple measures of effectiveness are necessary for proper evaluation of a given institution or program. However educators do not appear to have engaged in specific studies that explore differences in measures of program effectiveness as have been completed in studies of organizational effectiveness.

Two tangential studies were identified that offered possible explanations for the differences in student perceptions of program effectiveness. McBeath and Andrews (1960:10) found that students had a tendency to relate teacher effectiveness more closely with the "Consideration" dimension of leadership style than with the "Initating Structure" dimension suggesting structure tends to decrease student satisfaction. Greenfield and Andrews (1961:101) in a follow-up study on the effect of teacher leader behavior on student growth found that the "Initiating Structure" dimension was more strongly related to student growth than was the "Consideration" dimension. These findings suggest that structure does appear to contribute to student growth but at the expense of perceived effectiveness.

Table 62 was developed to show a comparison of the four programs and the relationship between formalization and program effectiveness.

Table 62

Comparison of the Programs on Formalization and Program Effectiveness Variables

Program	Formalization of Linkage	Rank Order on National Examination	Rank Order on Perceived Effectiveness
Algonquin College	High	1	3
Fanshawe College	High	2	4
SAIT	Low	3	2
NAIT	Low	4	1

The Algonquin College program recorded the highest mean scores on both aspects of the national examination and yet was not rated by its students as the most effective program of the four studied. Conversely the NAIT program was rated the most effective yet the performance of its students was significantly lower on the national examination than the other three programs. Can these differences be explained in terms of linkage dimensions? The Algonquin College program was characterized by high formalization, high coordination, asymmetrical resource commitment, high frequency of interaction, and low definitional reciprocity. On the other hand the NAIT program had a linkage dimension profile characterized by tacit, informal relations, a lower but symmetrical resource commitment, high frequency of interaction and low definitional reciprocity. In order to answer the question raised above it is necessary to examine how the linkage profile might affect the programs in question.

According to the interview data the Algonquin College program was highly structured with the college assuming a dominant role in all aspects of the program. The role of the college and the hospital in the training program was defined in the agreement. Student clinical evaluation was the responsibility of the program coordinator in conjunction with the clinical instructor. While attending the hospitals for clinical rotations the student returned to the college one day per week. In addition the student was still required to pay tuition fees during his clinical year. These findings were quite different from the situation found in the NAIT program. Once the student leaves the Institute of Technology and goes to one of the affiliated hospitals the responsibility for his training is assumed by the hospital. In fact, while completing the clinical year, the students received a stipend of $200.00 per month. At no time during their clinical year did the students return to the institution.

One question on the integration questionnaire was directed at the role of the student during his clinical year and was worded as follows:

> To what degree are the students considered as part of the day to day work force of the hospital department? For the department to function adequately student work output is:

Essential	Important	Useful	Of Limited Importance	Not Required
1	2	3	4	5

The modal response on this question from the NAIT program faculty (including hospital personnel) was "3" with the mean score being 2.6. This response was significantly different from the Algonquin College program at the 0.05 level when subjected to the analysis of variance test. The Algonquin College respondents also recorded a modal response of "3," however three respondents indicated a "4" with four rating the item "5"; the mean was 3.9 on the five-point scale. This finding suggests that the NAIT program affiliated hospitals perceived the students as being needed to contribute to the departmental labor force more than did the hospitals in the Algonquin College program.

This discussion suggests that the Algonquin College is a highly formalized program with power resting with the college. Further, the students are considered students of the college for the entire length of the training program. The NAIT program however appears to rely on an "on the job" training approach to complement the theory taught at the institution. The relationship is voluntary rather than mandated. These findings would suggest that a joint cooperative program characterized by high formalization of the relationship is likely to result in higher student achievement. From this a generalization about linkage dimensions and program effectiveness might be drawn:

> *If a joint cooperative program is characterized by high formalization, standardization, and relative resource commitment in its linkage dimensions then the cooperative program is likely to result in higher student achievement than a program characterized by low formalization, standardization, and relative resource commitment.*

Hall et al. (1977:470) offer some support for the above generalization:

> With a formal agreement, many of the issues involved in exchange situations are apparently resolved, since the issues of competence of personnel, performance, and compatibility of operating philosophy no longer appear to be relevant, although power is still operative in these situations.

Only one study was identified which could be construed as refuting the generalization. MacKay (1964) did a study which was designed to examine the relationship between organizational structure and teacher performance as measured by student achievement and he found that formalization as determined by the "Hall-type" measures of bureaucracy was inversely related to student achievement. Notwithstanding MacKay's findings, formalization between organizations is somewhat different than formalization within an organization hence his findings do not necessarily negate the above posited relationship.

Caution is necessary when considering the relationship between linkage dimensions and program effectiveness however the discussion is clear that the impact of linkage does affect major areas of the cooperative program hence the inference stated above is not unwarranted and worthy of more vigorous investigation.

The discussion thus far has not explained why the NAIT program students perceived their program as the most effective of those studied. One plausible explanation could rest with the finding that the NAIT students contribute to the hospital work force and receive a stipend while at the hospital. The students apparently do shift work, assume a specific patient load and are generally treated as coworkers within the hospital. This in turn could result in the student feeling more like an employee rather than a student. Also with the emphasis on "on the job" training the student likely has less time for rigorous study during his clinical year. These factors could account for the students perceived satisfaction with the program but poor performance on the national examination.

The findings on the SAIT program, although not dissimilar to those found in the NAIT program, were not significantly different from the Ontario programs in terms of student achievement at the 0.05 level. However the differences between the means on the multiple choice examination amounted to 4.2 percent and 4.6 percent respectively. These findings suggest that other factors beside linkage formalization account for the differences of program effectiveness among the programs studied. Notwithstanding these comments, some general trends were identified supporting the generalization previously stated. These findings are tenuous at best and warrant further rigorous investigation.

SUMMARY

This chapter presented a generalizing analysis of the research findings related to linkage dimensions, degree of program integration, and program effectiveness in an attempt to develop generalizations which could serve as a basis for further study. This generalizing analysis was presented against the theoretical background and review of the literature contained in Chapter 2.

The findings on linkage dimensions suggested the following generalizations are worthy of further investigation in a joint cooperative program:

1. *If a joint cooperative program is characterized by a high relative resource commitment and the resource commitment is symmetrical then the cooperative program is likely to be characterized by high formalization and definitional reciprocity.*

2. *If one organization engaged in a joint cooperative program has a high resource commitment then the cooperative program is likely to be characterized by high formalization and structural standardization (coordination).*

3. *If a joint cooperative program demonstrates an asymmetrical relative resource commitment then the cooperative program is also likely to demonstrate low definitional reciprocity.*
4. *If a joint cooperative program is characterized by a symmetrical relative resource commitment and the resource exchange is low then the cooperative program is likely to be characterized by low formalization and structural standardization (coordination).*
5. *If a joint cooperative program is characterized by a high degree of agreement formalization then the cooperative program is likely to be characterized by high structural and procedural standardization.*

These generalizations derived from the findings suggest that the key variables determining the pattern of linkage dimensions are the degree of relative resource commitment and the symmetry of the resource exchange.

The findings on the degree of program integration were difficult to assess especially in relationship to the linkage dimensions profile. Two possible relationships were suggested in the discussion on integration. One was that the degree of program integration is positively related to the linkage variable "frequency of interaction." A more plausible explanation would be that degree of integration and frequency of interaction tap the same dimension. Some support for that conclusion was found in the work of Schmidt and Kochan (1977).

The final section of the chapter examined the possible relationship between linkage dimensions and program effectiveness. Two important findings were noted. First, differences were identified between the measures of program effectiveness lending support to the hypothesis that organizations can be effective on one effectiveness indicator but often at the expense of another. Second, there appeared to be some evidence albeit weak to support the following generalization:

> *If a joint cooperative program is characterized by high formalization, standardization and relative resource commitment in its linkage dimensions then the cooperative program is likely to result in higher student achievement than a program characterized by low formalization, standardization and relative resource commitment.*

Insofar as the study was exploratory in nature, examining the possible interorganizational relationships that exist in four joint cooperative programs, some insights have been gained regarding the nature of these relationships. However, caution is mandatory in that any findings of this study require further investigation before they can be viewed as anything more than generalizations which developed from a case study of four programs.

CHAPTER 11

SUMMARY, CONCLUSIONS, IMPLICATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

This chapter is divided into four sections: (1) summary of the study and its findings, (2) conclusions, (3) implications and (4) suggestions for further study and research.

SUMMARY OF THE STUDY

Purpose and Problems of the Study

The major purpose of the study was to explore the possible relationships that might exist between interorganizational linkages, degree of integration, and effectiveness of four selected joint cooperative programs. Further, the interrelationships among the linkage dimensions were examined.

In order to answer the above questions it was necessary to answer the following sub-problems.

A. Linkage Dimensions

1.0 Formalization

1.1 To what degree was the official sanction for the continuance of the program formalized?

1.2 To what extent were program coordination activities formalized?

1.3 To what extent were program liaison activities clearly delineated?

2.0 Intensity

2.1 What is the frequency of interaction among the program constituents?

2.2 What is the relative resource commitment of the participating institutions?

3.0 Reciprocity

3.1 To what degree are resources mutually exchanged?

3.2 To what degree were the terms of the relationship mutually agreed upon?

B. Degree of Integration

1.0 To what extent does the college contribute to integration?

2.0 To what extent does the hospital contribute to integration?

3.0 To what extent is there mutual or two-way integration among the program constituents?

C. Program Effectiveness

1.0 How effective is the program according to student perceptions?

2.0 How effective is the program according to the Canadian Medical Association evaluation process?

3.0 How well did program graduates do on the 1977 national registration examination of the Canadian Society of Respiratory Technologists?

Focus of the Study

The study was focused on the forms of linkage that join organizations involved in a joint cooperative program. The work of such people as Marrett (1971), Hasenfeld and English (1974) and

Hall (1977) had suggested that the identification of the ways in which organizations are linked should provide useful information for interorganizational theory. This study was concerned with identifying and investigating interorganizational linkages in four joint cooperative programs sponsored by a community college and affiliated hosptials. The specific allied health program studied was respiratory technology.

Justification for the Study

The study was justified on two grounds. First, interorganizational relationships appeared to be an important area for further research especially in human service organizations. Second, postsecondary institutions are becoming more involved with external organizations in order to develop career oriented programs. The interorganizational linkages developed by these organizations may or may not result in an effective program. By examining the forms of linkages of joint cooperative programs participating organizations could, perhaps, increase program effectiveness by making changes in the linkage structure.

Conceptual Framework

A framework for the study was derived from the work of Marrett (1971) on the specification of interorganizational dimensions. The specific linkage dimensions developed in the framework included the degree of formalization of the relationship, the degree of intensity of the relationship, and the reciprocity of the relationship. In order to provide a basis for assessing the impact of linkage dimensions on a joint cooperative program, the degree of integration and overall program effectiveness were considered important variables for this study.

Since the study was exploratory in nature and only four programs were investigated no research hypotheses were developed at the outset of the study.

Respondents in the Study

The respondents in the study were all full time respiratory technology instructional staff employed at either the college or affiliated hospital plus the technical director of the hospital respiratory technology department and departmental supervisors who were involved in the training program. The second group of respondents involved in the study were the senior students enrolled in the program.

Instrument Development

Two instruments were required in order to measure the respondents' perceptions of program integration and effectiveness. A search of available instrumentation revealed that no previously validated means of measuring integration in an educational context appeared to exist. Although a number of instruments were available to assess program effectiveness none were considered suitable for this study. Hence two new instruments were developed by the researcher with assistance from a panel of experts. A pilot study was conducted using respondents from the joint cooperative program Medical Laboratory Technology. The results of the pilot study indicated that portions of the research instruments needed further clarification and modification before being used in the main study. Modifications suggested by the findings of the pilot study were included in the final draft of the research instruments.

The integration instrument was composed of 24 items with nine items related to college integration activities, eight items related to hospital integration activities and seven items designed to assess two-way integration activities. Two basic five-point response scales were developed for the items: one assessing frequency of interaction from "Never" to "Frequently," the other scale assessing the quality of interaction from "Very poor" to "Excellent." A final item was included in the questionnaire which attempted to assess the degree to which students contributed to the hospital labor force while completing their clinical experience. Only the college faculty members, hospital instructional staff and selected supervisors were invited to complete the integration instrument.

The effectiveness instrument developed for use in this study was composed of 11 items which tapped broad program areas such as quality of instruction, curriculum relevancy, clinical experiences and other global indicators to which the student could react. Two items related to first year effectiveness, four items related to second year effectiveness and five items related to overall program effectiveness. All senior students in the four programs were invited to complete the effectiveness instrument.

During the development of the instruments considerable effort was made to ensure the instruments had content validity. As reported earlier a pilot study was conducted with a group of respondents in a program considered in many respects to have characteristics in common with the main study program. The final drafts of the instruments were resubmitted to the panel of experts for review and comment. It was concluded that the content validity of the instruments used in this study was reasonably established on the commentary from the pilot study and panel of experts. An ex-post test of validity was supplied by the questionnaire responses in that no questions were raised by the respondents under the section "comments" that could be regarded as relating to validity.

Data Collection

The study responded to a need for exploratory investigations into the ways in which organizations are linked to each other when participating in joint cooperative programs. In order to gather information on the linkage dimensions specified in the conceptual framework, interviews were conducted with the college program head and the technical director from each affiliated hospital in the four programs studied. On-site visitations to conduct the interviews and distribute the questionnaires to the previously described respondent groups occurred in June 1977 in Calgary, Ottawa, London, and Edmonton. In addition to interviews the primary means of data collection were the two questionnaires described below. They appear as Appendices A and B of this dissertation.

Integration questionnaire.

The integration questionnaire was composed of two parts, one to collect data on selected personal and demographic variables and the second part to gather perceptual data from faculty members on program integration activities.

The first part of the questionnaire collected data from the faculty respondents on eight personal and demographic variables including sex, age, year of CSRT registration, program of graduation, job title, years of work experience, work experience as a respiratory technologist and the highest level of education attained. Respondents checked off appropriate categories or filled in requested information.

The second part consisted of 25 items, 24 of which related to integration activities. Respondents were asked to react to each statement by circling the most appropriate of the five-point response scale. The final item on the questionnaire requested the respondents to indicate the degree to which students contributed to the hospital work force.

Effectiveness questionnaire. The effectiveness questionnaire was composed of three parts. Part one collected data from the student respondents on seven personal and demographic variables including sex, age, previous hospital experience, highest level of education attained, years of work experience, program of enrollment, and the level of education attained by parents. Respondents checked off appropriate categories or filled in requested information.

The second part consisted of eight integration activities that the students could react to in the same manner as described in the integration questionnaire description.

The third part of the questionnaire was composed of 11 items which sought respondents' perceptions of program effectiveness. Respondents were asked to respond to each item by circling the most appropriate of five response categories. Although the specific wording for each response category varied from item to item, the general pattern ran from "Very poor" to "Excellent."

Interview data. In order to complete the data gathering for this study interviews were held with the college program head and the technical director of each affiliated hospital in the four programs studied. The primary purpose of these data was to describe the linkage dimensions that existed in the joint cooperative program. A secondary purpose was to describe the program and gather information to assist in checking the validity of the instruments used. To ensure a degree of similarity in the interviews an interview guide was used by the researcher to record the comments made by the interviewee. At the end of the interview the major comments were discussed with the interviewee to ensure information recorded was correct. Additional pertinent program information, such as the terms of reference for advisory committees, was requested at the time of interview. The Canadian Medical Association accreditation reports were obtained from the files of the President of the Canadian Society of Respiratory Technologists as were the results of the 1977 registration examinations.

Data Treatment

Questionnaire data were coded on data processing cards for analysis. The personal and demographic variables were coded in accord with the requirements of the computer program. Responses to the integration instrument were coded as follows: "1" for a response which represented either the "Very poor" or "Never" response categories on up to "5" for "Excellent" or "Frequently" response categories.

Responses to the program effectiveness questionnaire were coded as follows: "1" for responses indicating low perceived effectiveness on up to "5" for indicators of high perceived effectiveness.

Interview data were treated in two ways; first a synopsis of the respondents' comments was made and then the information was analysed and coded in accord with a system developed by the researcher (see Appendix D). The coding system permitted the development of a linkage dimension profile for each program studied.

The initial analysis of the questionnaire data involved the determination of the frequencies and percentage distributions of responses on all items.

The faculty and student data on personal and demographic variables were cross tabulated and significant differences between groups were sought by means of the chi square test of statistical significance.

In order to see if the perceptions of the faculty and student respondents on eight common items on the two questionnaires were in accord, the t-Test was used.

Data from the integration questionnaire were submitted to comparative analysis by program using the "F-test." This statistical approach permitted examination of differences in perceived integration between programs.

The effectiveness questionnaire data were treated in the same manner described in the previous section on integration so that it was possible to identify any differences that might exist in perceived program effectiveness. The results of the 1977 registration examination were treated using analysis of variance on scores of the students classified by program.

The research findings generated by the previously described analysis provided the data necessary to compare each program investigated on the research variables linkage, integration, and effectiveness. The linkage dimension variables were not subjected to statistical treatment but were carefully examined to see if differences existed between programs. These treatments permitted the research findings to be analysed and discussed in relation to the major questions posed at the outset of the study.

Description of Respondents

Data were collected on eight personal and demographic variables for the faculty members, and seven personal and demographic variables for the student respondents. The purpose of gathering these data was to see if differences in either faculty or student backgrounds existed among the programs studied. All the personal and demographic variables were cross tabulated by program and subjected to the chi square statistic. This analysis, with one exception, revealed that no significant differences existed at the .05 level on the variables examined. The one exception was the school of graduation of faculty members and the findings revealed that each program tended to hire its own graduates. Complete information on the specific findings for each program is provided in Chapter 4.

Summary of Research Findings on the Four Programs

The complete findings and description of each program studied are the major thrust of Chapters 5 through 8. Each chapter provides a description of the program and the findings related to linkages, integration, and program effectiveness.

Fanshawe College. The linkage dimension profile of the Fanshawe College of London, Ontario revealed that the program linkages were characterized by a relatively high degree of formalization, a high frequency of interaction, an asymmetrical relative resource commitment with the college providing the major resources, a relatively low degree of resource exchange and a high definitional reciprocity.

The findings on the degree of program integration indicated that physical integration by means of interagency visitations and resource exchange were found to be low or minimal. The degree of cooperation appeared to range from "fair" to "good." Of the three integration variables studied the mutual or two-way integration activities appeared to be rated the highest of the three integration indicators used.

The students generally rated the program effectiveness items as "3" or "fair" on the five-point scale, however on the 1977 registration examination all the Fanshawe College students were successful. These findings suggested that the program was effective in preparing its graduates for national certification but the students only perceived program effectiveness as "fair." Hence differences appeared to exist between student performance and perceived effectiveness.

Algonquin College. The linkage dimension profile of the Algonquin College program located in Ottawa, Ontario indicated that the linkages of the program were characterized by a high degree of formalization, high frequency of interaction, an asymmetrical relative resource commitment with the college supplying the major resources, a relatively low degree of resource exchange and a low definitional reciprocity.

The degree of program integration indicated that there was little or no exchange of instructional staff, however equipment and facilities were generally well shared. The cooperation and communication among the program constituents were perceived to be fairly good. Of the three integration indicators examined the mutual or two-way activities were rated marginally higher than either the college contribution to integration or the hospital contribution to integration.

The student respondents generally rated the 11 items on the effectiveness scale between "fair" and "good" on the five-point scale and the students performed well on the 1977 registration examination. Only two students failed and the grades achieved by the students on both aspects of the examination were the highest of the four programs studied. On the basis of these findings it was concluded that the Algonquin College program was very effective as far as student performance was concerned but less effective in terms of students' perceptions.

Southern Alberta Institute of Technology (SAIT) program. SAIT is located in Calgary, Alberta. The linkage dimension profile for the program identified the following linkage characteristics. Linkage formalization was low with the relationship being tacit and informal. No formal contracts existed between the organizations involved. The frequency of interaction among the program constituents was high and the relative resource commitment symmetrical. The resource exchange was relatively low and the definitional reciprocity low on the one indicator examined.

The data on degree of integration revealed that little or no exchange of instructional staff occurred among the organizations involved in the program. The students visited the hospitals regularly during their first year however once they were at the hospital for the clinical experience they did not return to the institute. Overall communication and cooperation among the institutions involved were perceived to be from "fair" to "good." Little difference could be ascertained between the three major indicators of integration.

The student respondents generally rated the items on the program effectiveness questionnaire between "3" and "4" on the five-point scale suggesting the students perceive the program effectiveness to be somewhere between "fair" and "good." The results of the 1977 registration examination revealed that Calgary program graduates were 83 percent successful. The performance on the multiple choice part of the examination was identical to the national mean while their performance on the clinical assessment examination was almost 100 points above the mean. These findings suggested that the SAIT program was reasonably successful in preparing its graduates for national certification. Interestingly enough, the students' perceptions of program effectiveness were somewhat higher in that they generally rated the effectiveness items somewhere between "good" and "excellent."

Northern Alberta Institute of Technology (NAIT) program. The linkage dimension profile for the NAIT program located in Edmonton, Alberta was found to be identical to that of the SAIT program. Linkage formalization was low with the relationship being tacit and informal. No interorganizational contracts existed among the participating institutions. The frequency of interaction was high and relative resource commitment symmetrical. The resource exchange was relatively low while the definitional reciprocity was low on the one indicator measured.

The findings on the degree of program integration were essentially the same as those for the other programs studied. Very little instructional staff intervisitation occurred although the respondents indicated that the hospital staff sometimes teach at the college. Likewise the amount of resource exchange among the participating organizations was low. Cooperation and communication were considered to be good among the program constituents. Of the three integration variables studied the mutual or two-way integration activities appeared to be rated higher than either the college contribution to integration or the hospital contribution to integration.

Students in the NAIT program perceived the effectiveness of the program to be "good" as evident from their rating seven of the 11 effectiveness items "4" or better on the five-point scale. However, NAIT students performed very poorly on the 1977 national examination with a failure rate of 46.6 percent. The Edmonton program graduates had mean scores on both examinations lower than the national means. Overall the NAIT program failures represented 37.8 percent of all failures across Canada. Although there would appear to be considerable incongruence among the indicators of effectiveness it is apparent that the NAIT program was significantly less effective than the other three programs studied in terms of student performance. However the program was perceived by the students as being the most effective of the four programs studied. This finding would suggest the NAIT program has some underlying factor which resulted in a high degree of student satisfaction.

Summary of Comparative Research Findings in Relation to Programs

In order to explore the possible relationships between linkage dimensions, degree of program integration and overall program effectiveness, it was necessary to compare the data from each program. Chapter 9 provides an indepth report on the findings. The linkage dimensions were compared by developing a profile of the linkage dimensions from the four programs. The data on integration and effectiveness were analyzed using analysis of variance.

The data on linkage dimensions revealed that the degree of linkage formalization demonstrated differences among the programs studied. The most formal program was the Algonquin College program in Ottawa while the Alberta programs were characterized by tacit, informal relations. The Fanshawe College program was between the two extremes noted, however the program was fairly formalized in terms of linkage. The linkage dimension of intensity revealed that all programs demonstrated a high frequency of interaction, however the relative resource commitment was higher in the Alberta affiliated hospitals than in the Ontario affiliated hospitals. Conversely, the Ontario colleges indicated a higher relative resource commitment to the programs than the Alberta colleges. Findings on the reciprocity of the relationship revealed that the degree of exchange among organizations involved in the joint cooperative programs was low. The definitional reciprocity was low in three of the four programs and was high in the Fanshawe College program.

The findings on the degree of integration did not identify major differences among the four programs studied. Nine of the 24 integration items revealed significant differences between at least two programs. The differences tentatively suggested that the NAIT program was better integrated than the other three programs as far as the hospital contribution to integration and the mutual or two-way integration activities were concerned.

The final analysis dealt with indicators of program effectiveness. No differences were identified by the Canadian Medical Association evaluation process as all programs were fully accredited. The perceptual data on program effectiveness revealed that the NAIT students perceived their program to be the most effective in terms of the global indicators of effectiveness. However on the national examination the NAIT students performed significantly less well than did the graduates of the other three programs. Hierarchical ordering of the national examination results indicated the Algonquin College program graduates performed the best followed by the Fanshawe College program then the SAIT program and finally the NAIT program.

Summary of the Findings of a Generalizing Analysis of the Four Programs

Chapter 10 presented a generalizing analysis of the four programs in order that possible relationships between linkage dimensions, program integration and program effectiveness could be explored so that some generalizations for joint cooperative programs could be postulated. The generalizing analysis was presented against the theoretical background and review of the literature contained in Chapter 2. This approach was adopted because of the limitations of testing hypotheses where only four joint programs are involved. Other limitations were noted including the small number of the Fanshawe College respondents. Some relationships were apparent from the data analysis however no rigorously defensible positions could be adopted. The generalizations developed appear to have a fundamental logic to them however further investigation is necessary before these findings could be accepted as anything more than tentative.

The findings on the linkage dimensions examined for the four programs suggested the following generalizations are worthy of further investigation in a joint cooperative program.

1. *If a joint cooperative program is characterized by a high relative resource commitment and the resource commitment is symmetrical then the cooperative program is likely to be characterized by high formalization and definitional reciprocity.*

2. *If one organization engaged in a joint cooperative program has a high relative resource commitment then the cooperative program is likely to be characterized by high formalization and structural standardization (coordination).*

3. *If a joint cooperative program demonstrates an asymmetrical relative resource commitment then the cooperative program is also likely to demonstrate low definitional reciprocity.*

4. *If a joint cooperative program is characterized by a symmetrical relative resource commitment and the resource exchange is low then the cooperative program is likely to be characterized by low formalization and structural standardization (coordination).*

5. *If a joint cooperative program is characterized by a high degree of agreement formalization then the cooperative program is likely to be characterized by high structural and procedural standardization.*

The findings from the four programs and the generalizations presented indicate that two linkage variables appear to determine the pattern of linkage dimensions. The two key dimensions are the degree of relative resource commitment and symmetry of the resource exchange.

The research findings on the degree of integration were difficult to assess because few differences could be identified among the four programs. The lack of differences precluded a detailed investigation of a relationship between a given linkage profile and the degree of program integration. Two possible relationships did appear to warrant at least some consideration. First the degree of program integration could be positively related to frequency of interaction. However the logic is compelling that these are really two measures of the same dimension. When the study was conceptualized the researcher felt that the two measures were conceptually independent but the lack of differences identified and results of a recent study by Schmidt and Kochan (1977) suggest that integration is really an extension of the frequency of interaction. This conjecture would be worthy of further investigation.

The final section of Chapter 10 examined the possible relationship between linkage dimensions and program effectiveness. As reiterated throughout this particular section of Chapter 10 any relationship imputed between linkage dimensions and overall program effectiveness is tenuous at best. Notwithstanding the limitation the findings suggest the following generalization:

> *If a joint cooperative program is characterized by high formalization, standardization and relative resource commitment in its linkage dimensions then the joint cooperative program is likely to result in higher student achievement than a program characterized by low formalization, standardization and relative resource commitment.*

CONCLUSIONS

A number of general conclusions regarding various aspects of the study are presented for consideration.

1. Utility of the Linkage Dimension Approach

Post-secondary institutions are complex organizations and develop interdependent relationships with other organizations as their need for physical and human resources intensifies. One example of interdependent relationships is the joint cooperative program developed in conjunction with external organizations or agencies.

The impact of the interdependent relationship on the program is difficult to assess unless one can develop a method of analysis which permits identification of the nature of the interorganizational relationship. Hall (1977:470) posited that two fundamental forms of relationship can exist: first the voluntary interaction in which organizations develop relationships for the purposes of specific goal attainment and second the mandated interaction in which the basis for interaction is the legal mandate or formal agreement. Depending on the basis of the relationship different mechanisms of coordination are likely to exist which might or might not be appropriate for the specific relationship.

The linkage dimension approach for studying joint cooperative programs appears to have considerable utility because it examines: (1) the formalization of the relationship including indicators of agreement formalization, structural standardization (coordination) and procedural standardization, (2) the intensity of the relationship including indicators of frequency of interaction and relative resource commitment and (3) the reciprocity of the relationship including indicators of resource exchange and definitional reciprocity.

2. Limitations of the Study

The measurement of social relationships including interorganizational relationships has posed a major methodological problem for organizational researchers. At the outset of the study a number of decisions had to be made on the ways in which the data might be best gathered and analysed. Three approaches to data collection were selected: (1) interviews with middle management personnel, (2) questionnaires to gather staff perceptions of program integration and (3) questionnaires to gather student perceptions of program effectiveness. Additional hard data were obtained from the Canadian Society of Respiratory Technologists.

These approaches posed limitations for the study in that the data were primarily perceptual in nature. The perceptions of an individual are based on his life orientation and interpretation of a given situation hence distortion is possible. However the assumption was made that the perceptions of the respondents generally resulted in authentic and valid responses.

A second limitation of the study was the limited generalizability of the findings. While the study did examine four joint cooperative programs in two provinces the programs were specialized and unique. Therefore the specific findings require further research to ascertain their validity for joint cooperative programs in other settings.

Another limitation of the study rests with the instruments used. Both instruments were developed by the researcher and were subjected to a pilot study prior to use in the major study. Tests administered on only two occasions do not lend themselves to measures of reliability. In addition a number of items on the integration instrument revealed few differences among the programs raising the question about the sensitivity of some of the items. However, observations made at the time of the on-site visitations suggested that generally valid information was gathered on the programs studied.

A fourth limitation of the study was that only four programs were studied and in one program only seven staff respondents participated. This posed a serious limitation on the statistical procedures that could be used.

3. Relationship among Effectiveness Measures

This study utilized three indicators of program effectiveness: (1) student perceptions of effectiveness, (2) student performance on a national examination and (3) external accreditation status reports. Since all programs studied were fully accredited, no differences were observed on that indicator, however the findings on the other two measures were interesting. The student perceptions of effectiveness were considerably different from their performance on the national examination. The program rated the most effective by the students had the worst record of student performance on the national examination. Conventional wisdom suggests that student ratings of effectiveness can be interpreted as measures of satisfaction while performance on an examination is a measure of productivity. This finding provides further support to the contention that effectiveness is a difficult construct to measure because organizations can be highly effective on one measure but often at the expense of another. Programs that stress student satisfaction can raise the level of satisfaction to the point where productivity may be compromised. Qualified support was found for this contention.

4. Key Linkage Variable

Careful analysis of the research findings on linkage dimensions suggested that a key linkage variable is the degree of relative resource commitment. If organizations can develop joint cooperative programs and keep their relative resource commitment to a minimum then the relationship is likely to be characterized by tacit, informal relations. Conversely if a joint cooperative program necessitates high resource commitments then it is unlikely that such resources would be committed without formal consent. Hence the linkage dimension profile for the indicators studied appears to be dependent on the degree of relative resource commitment.

IMPLICATIONS OF THE FINDINGS AND THE CONCLUSIONS

On the basis of the research findings and the conclusions drawn, a number of possible implications can be identified for consideration. The implications are divided into two sections: (1) implications for interorganizational theory and (2) implications for educational administration.

Implications for Interorganizational Theory

The purpose of the study was to explore the interorganizational relationships between organizations participating in joint cooperative programs to see if a given linkage dimension profile was related to the degree of program integration and effectiveness. Some generalizations were drawn on possible relationships within the limited context of what has to be viewed as an extended case study of four joint cooperative programs. Further research is mandatory to confirm or reject what appeared to be the findings in this study.

The first implication of the findings is the possibility that the degree of program integration as conceptualized in this study is actually another indicator of the intensity of the relationship rather than the result of a specific pattern of linkage as was originally conceived. At the outset of the study the logic was compelling that specific patterns of linkages would result in differing degrees of integration. Since no major differences existed among the four programs studied on the degree of integration, yet considerable differences were noted on linkage dimensions, the original idea would appear to be incorrect. Examination of the linkages revealed that the only linkage indicator that was the same in all four programs was the frequency of interaction. Hence it is possible that the items on the integration instrument were tapping a dimension similar to the frequency of interaction examined in this study. More research is needed on what constitutes meaningful indicators of intensity of the relationship as well as the determinants of the degree of integration in joint cooperative programs.

A second implication of the research findings relates to the emergence of the variable, relative resource commitment, as a possible determinant of the interrelationship among linkage dimensions. In the two Ontario programs where the relative resource commitment of the colleges was high, the formalization of the relationship was also high. Conversely, the Alberta programs were characterized by a lower relative resource commitment and tacit, informal relations, yet the goals of the programs were apparently identical. This would imply that there must be some underlying reason for the Ontario colleges committing more resources to a joint cooperative program than other colleges engaged in a similar program. A logical explanation in this case is that the funding arrangement for clinical training in Ontario is different from that in Alberta. However the important implication of these differences noted in the programs studied is that there could be compelling reasons for some organizations to develop a specific pattern of linkage. It would be useful to ascertain the reasons why some organizations commit large resources to a program while others do not.

A third implication of the research findings relates to coordination activities. In all programs studied a committee existed for the purpose of providing liaison among the participating organizations. These committees met regularly and had representation from all involved organizations. However only two programs had a formal program coordinator to oversee all aspects of the program. Both of these programs were characterized by high formalization of the relationship. Hence formal coordination activities appear related to formal agreements which is in contrast to Hall's et al. (1977:466) findings that coordination had little relationship to formal agreements (r = .06). However it could be that coordination in joint cooperative programs is somehow different from that of organizations involved with problem youth. In this study the question was asked about the formalization of coordination activities whereas in Hall's et al. (1977) study the question was asked about the extent of coordination.

These findings suggest that both the extent and degree of formalization of the coordination activities are important and should be examined together.

A final implication of these findings relates to the basis of the interorganizational relationships. Albeit only four joint cooperative programs were studied, however two bases for the relationships emerged. Two programs were characterized by tacit, informal relations with the power of the relationship being symmetrical, while the other two programs were characterized by high formalization of the relationship with an asymmetrical power base. These findings suggest that two bases for the relationships exist, one being relatively voluntary and informal while the other is based on formal agreements.

The basis of the relationship would logically alter the ways in which the organizations interact. This implication is in fact what Hall, et al. (1977) found in their study of organizations for problem youth.

Implications for Educational Administrators

The findings of this study have a number of implications for educational administrators. As stated in the introduction post-secondary institutions are becoming increasingly involved with external organizations as the demand for more diverse and complex educational programs increases. This in turn places pressure on administrative personnel to be aware of the constraints inherent in and implications of joint cooperative programs.

One implication of the findings is that the college administration should examine the pattern of linkages that have developed in joint programs to ensure that responsibility and accountability are clearly defined. Two of the four programs studied were characterized by tacit, informal relations hence the important issues of responsibility and accountability were left up to the individuals within the participating organizations instead of being clearly defined within the framework of joint cooperative programs. In fact one program issued a diploma for the total program yet exerted little control over the clinical portion of the program. Hence it would appear that administrators of joint cooperative programs should ensure that accountability and responsibility mechanisms are established for all aspects of the program.

A second implication is derived from the first. Two bases for the interorganizational relationship were identified, one being voluntary and informal while the other was based on formal agreements. The methods of coordination and procedural standardization achieved within a joint cooperative program appear to differ according to the basis of the relationship. Hence an administrator should be aware that the basis of the interorganizational relationship will affect the ways in which the individuals within the program perform their tasks.

A third implication of the research findings relates to the effectiveness of "on the job" training. The two programs in which students received a stipend and were the total responsibility of the hospitals produced graduates who performed less well on the national examination than did the programs where the college assumed responsibility for the students. This finding would suggest that "on the job" training is useful in preparation of individuals to perform specific tasks but it may do so at the expense of the theoretical component of education. Administrators of joint cooperative programs must clearly define the purpose of the external training and take the necessary steps to ensure these objectives are met and that the certification procedure reflects the priorities on theory and external training.

A fourth implication for educational administrators relates to measures of program effectiveness. This study revealed differences between student perceptual measures of effectiveness and student performance on a national examination. Whenever program evaluation is attempted a multiple criteria approach is likely to generate more information about a program, however some conflict between the findings produced by the different data sources should not be unexpected. Well satisfied students might conceivably achieve their level of satisfaction at the expense of performance on formal examinations. Notwithstanding the difficulties posed for those who must interpret the results, there would seem to be a need for administrators to utilize multiple criteria approaches to the evaluation of joint cooperative programs. Further, because of the constraints and problems in joint programs, administrators should monitor joint cooperative programs carefully and frequently.

A fifth implication of the research findings relates to the coordination procedures. Those programs characterized by high formalization had a formal coordinator to oversee the activities of the participating organizations. Their program graduates performed better on the national examination than did those from programs without formalized coordination procedures. This inference would seem to be that any joint cooperative program should have some formal method of coordination established.

The five implications for educational administrators outlined thus far suggest that the topic of interorganizational relations should be included as a part of a program for the preparation of educational administrators. The ramifications of joint cooperative programs appear to be numerous hence knowledge of the theoretical bases for interorganizational relationships should assist educational administrators in making programs more effective.

SUGGESTIONS FOR FURTHER RESEARCH

This study has generated a lengthy list of suggestions for further research but only some of the main ones will be presented for consideration in this section.

1. Generalizations Related to Interrelationships among Linkage Dimensions

Five generalizations were developed from the findings of this study on the interrelationships among the linkage dimensions. Due to the limitations of this study one cannot say with confidence that these generalizations apply in the case of all joint cooperative programs. Further research on linkage dimensions of joint cooperative programs would be useful to accept or reject the generalizations presented earlier in this chapter.

2. Relationship Between Linkage Formalization and Program Effectiveness

As previously discussed any relationship imputed between linkages among organizations and program effectiveness is tenuous at best, however this study found that highly formalized linkages were related to the structure of the educational program in many ways. The more formalized programs did appear to produce graduates who performed better on a national examination. The evidence from this study could not impute causality however one relationship between linkage formalization and effectiveness was presented which is worthy of further research. The relationship hypothesized suggests that a joint cooperative program characterized by high formalization, standardization and relative resource commitment in its linkage dimensions is likely to result in higher student achievement than a program characterized by low formalization, standardization and relative resource commitment.

3. Research on Joint Cooperative Programs

An important implication of the research findings for interorganizational theory relates to the apparent applicability of the linkage dimensions approach to the study of joint cooperative programs of community colleges and universities. The original framework developed by Marrett (1971) was envisioned as being applicable to social welfare agencies. Other related studies by Hall, et al. (1977) and Schmidt and Kochan (1977) were directed at interorganizational relationships for organizations such as those that deal with problem youth. This study utilized some of the ideas of Marrett (1971) in the study of a college program and the results suggest that the methodological approach was useful. Hence a series of studies directed toward joint cooperative programs for college and university programs could provide a valuable contribution to the body of knowledge that constitutes interorganizational theory.

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APPENDICES

APPENDIX A

INTEGRATION QUESTIONNAIRE

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INTEGRATION QUESTIONNAIRE

RESPIRATORY TECHNOLOGY COLLEGE/HOSPITAL RELATIONSHIP STUDY

JUNE 1977

This questionnaire is designed to identify the degree of intergration between the college and hospital components of the program in order to examine inter-organizational relationships in joint cooperative programs.

Your responses are regarded as confidential and will only be used for statistical purposes. They will not be released in any way that will allow them to be identified with you.

The only way in which this form will be deliberately coded is by the group which constitutes your primary association with the program (e.g., student, faculty, college or hospital).

SECTION I

FACULTY PERSONAL DATA

1. Sex: Male _____ Female _____

2. Age at last birthday was:

   (a) 20-29 1

   (b) 30-39 2

   (c) 40-49 3

   (d) 50-59 4

   (e) 60 or over 5

3. Year of CSRT registration was: ________

4. Which Respiratory Technology program did you graduate from:

   (a) Halifax School of Respiratory Technology . . . . _____

   (b) Algonquin College . . . . _____

   (c) Toronto Institute of Medical Technology . . . . _____

   (d) Fanshawe College . . . . _____

   (e) Winnipeg Health Sciences Program . . . . _____

   (f) Southern Alberta Institute of Technology . . . . _____

   (g) Northern Alberta Institute of Technology . . . . _____

   (h) Other (please specify) ______________________________

5. Your job title is: (please select the choice closest to your actual title)

(a) Hospital instructor . . . . ____

(b) College instructor . . . . ____

(c) Program Director . . . . ____

(d) Technical Director or Department Head . . . . . . ____

(e) Supervisor . . . . ____

In completing the following questions regarding work experience please respond in terms of the nearest number of whole-years worked.

6. Number of years in your present job:

1 year ____

2 years ____

3 years ____

4 years ____

5 years ____

6 years ____

7 years ____

8 years ____

9 years or more ____

7. Number of years total work experience as a Respiratory Technologist:

1 year ____

2 years ____

3 years ____

4 years ____

5 years ____

6 years ____

7 years ____

8 years ____

9 years or more ____

8. Your highest level of education attained is:

(a) College or Technical School: No. of years ____________

(b) University: No. of years ____ Degrees held ____________

(c) Other, please specify ______________________________

SECTION II

PROGRAM INTEGRATION

Instructions:

The first year of the joint cooperative program is designed to provide the student with an adequate theoretical knowledge of respiratory technology which is then reinforced by the provision of planned clinical experiences and further theory during the hospital year. This questionnaire is designed to evaluate the degree of integration between the first and second year of the program. Based on your perception of the current program please respond to each statement as accurately as possible and circle only one response per question.

1. In the preparation of final hospital examinations assistance is received from the college instructors:

Never	Rarely	Sometimes	Often	Frequently
1	2	3	4	5

2. In the preparation of the final college examinations assistance is received from the hospital instructors:

Never	Rarely	Sometimes	Often	Frequently
1	2	3	4	5

3. In the determination of the course content for the hospital portion of the program input is received from the college instructors:

Never	Rarely	Sometimes	Often	Frequently
1	2	3	4	5

4. In the determination of the course content for the college portion of the program input is received from the hospital instructors:

Never	Rarely	Sometimes	Often	Frequently
1	2	3	4	5

5. How frequently is equipment provided by the college for the hospital components of the program?

Never	Rarely	Sometimes	Often	Frequently
1	2	3	4	5

6. How frequently is equipment provided by the hospital for the college components of the program?

Never	Rarely	Sometimes	Often	Frequently
1	2	3	4	5

7. In general, how often do college instructors actively teach in the hospital portion of the program?

Never	Rarely	Sometimes	Often	Frequently
1	2	3	4	5

8. In general, how often do hospital instructors actively teach in the college portion of the program?

Never	Rarely	Sometimes	Often	Frequently
1	2	3	4	5

9. How frequently do hospital instructors participate in inservice programs or professional development activities at the college?

Never	Rarely	Sometimes	Often	Frequently
1	2	3	4	5

10. The college program head and the hospital student coordinator (instructor) communicate (other than at committee meetings):

Never	Rarely	Sometimes	Often	Frequently
1	2	3	4	5

11. College/hospital instructional staff communicate (other than at committee meetings)

Never	Rarely	Sometimes	Often	Frequently
1	2	3	4	5

12. How frequently do college instructors visit the hospital on a regular basis for the purpose of gaining clinical experience?

Never	1 or 2 times/year	3-4 times/year	5-6 times/year	7 or more times/year
1	2	3	4	5

13. In general, how well does the theoretical knowledge presented in the first year relate to the practical application of that knowledge during the clinical year? Relationship is:

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

14. To what extent are the laboratory procedures as taught during the first year relevant to the practical procedures of year two? Relevancy is:

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

15. In general, how often are hospital visits held during the first year of the program?

Never	1 or 2 times/year	3-4 times/year	5-6 times/year	7 or more times/year
1	2	3	4	5

16. During the first year of the program how adequate are the planned hospital visits in reinforcing the theoretical learnings of the first year? Adequacy is:

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

17. How often are classes held at the college during the clinical year for students of participating hospitals?

Never	1 or 2 times/year	3-4 times/year	5-6 times/year	7 or more times/year
1	2	3	4	5

18. How much consultation is there between the college and hospital staff in the selection of students for the program? Consultation occurs:

Never	Rarely	Sometimes	Often	Frequently
1	2	3	4	5

19. How effective is the present college/hospital relationship in permitting maximum utilization of available resources (people, time, money, etc.) from the various participants of the program? Effectiveness is:

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

20. How adequate are the lines of communication between the college and hospital in assisting the overall program to keep current with the latest developments? Adequacy is:

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

21. When changes are made to the routines, procedures or equipment in one part of the program (college or hospital) how quickly are these changes communicated to participants in the other part of the program (hospital or college)? Speed of communication from the college to the hospital is:

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

22. When changes are made to the routines, procedures or equipment in one part of the program (college or hospital) how quickly are these changes communicated to participants in the other part of the program (hospital or college)? Speed of communication from the hospital to the college is:

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

23. From time to time, program related problems arise which require some kind of joint-problem solving activity. How adequate is the relationship between the college and hospital in coping with program-related problems as they arise? Adequacy is:

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

24. In general, how would you rate the integration of the hospital and college components of the program? Integration is:

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

25. To what degree are the students considered as part of the day to day work force of the hospital department? For the department to function adequately students work output is:

Essential	Important	Useful	Of limited importance	Not Required
1	2	3	4	5

THANK YOU FOR YOUR KIND ASSISTANCE

FOR PARTICIPATING IN THIS STUDY

If you have any comments you would like to make about the college/hospital relationship, please do so on this page.

COMMENTS:

APPENDIX B

PROGRAM EFFECTIVENESS QUESTIONNAIRE

APPENDIX B

PROGRAM EFFECTIVENESS QUESTIONNAIRE

RESPIRATORY TECHNOLOGY COLLEGE/HOSPITAL RELATIONSHIP STUDY

JUNE 1977

This questionnaire is designed to identify the degree of integration between the college and hospital components of the program in order to examine inter-organizational relationships in joint cooperative programs. The second part is designed to provide a global measure of the effectiveness of the program.

Your responses are regarded as confidential and will only be used for statistical purposes. They will not be released in any way that will allow them to be identified with you.

The only way in which this form will be deliberately coded is by the group which constitutes your primary association with the program (e.g., student, faculty, college or hospital).

SECTION I

- STUDENT PERSONAL DATA

Please complete each of the following items. All information l be treated confidentially and anonymity is assured.

. Sex: Male _____ Female _____

2. Age last birthday was: _____

3. Prior to entering the program of Respiratory Technology your hospital work experience was: (Respond in terms of the nearest number of whole years worked)

Nil _____	3 years _____
1 year _____	4 years _____
2 years _____	More than 4 years _____

4. Prior to entering the program of Respiratory Technology your highest level of education achieved was:

a) High school diploma . . . . _____
b) Senior matriculation . . . . _____
c) College or Technical School Diploma . . . . . . _____
d) University Degree . . . . _____

e) Other (specify) _____________________________

5. Prior to entering the program of Respiratory Technology your number of years total work experience was: (Respond in terms of the nearest number of whole years worked)

Nil _____	3 years _____
1 year _____	4 years _____
2 years _____	More than 4 years _____

6. In which Respiratory Technology program are you enrolled:

a) Halifax School of Respiratory Technology . . . _____
b) Algonquin College . . . . _____
c) Toronto Institute of Medical Technology . . . . _____
d) Fanshawe College . . . . _____
e) Winnipeg Health Sciences Program . . . . _____
f) Southern Alberta Institute of Technology . . . _____
g) Northern Alberta Institute of Technology . . . _____
h) Other (please specify) _____________________________

7. What was the highest level of formal education achieved by your parents:

	Mother	Father
a) Did not complete high school . . .	_____	_____
b) Graduated from high school	_____	_____
c) Graduated from technical institute	_____	_____
d) Some college or university, but did not obtain diploma	_____	_____
e) Graduated from college (earned diploma)	_____	_____
f) Graduated from university (earned baccalaureate degree)	_____	_____

SECTION II PROGRAM INTEGRATION

Instructions

The first year of the program is designed to provide the student with an adequate theoretical knowledge of respiratory technology which is then reinforced by the provision of planned clinical experiences and further theory during the second year. This portion of the questionnaire is designed to evaluate the degree of integration between the first and second year of the program. Please respond to each statement as accurately as possible by circling only one response per question.

1. In general, how well did the theoretical knowledge presented in the first year relate to the practical application of that knowledge during the clinical year? Relationship was:

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

2. In general, how often were hospital visits held during the first year of the program?

Never	1 or 2 times/year	3-4 times/year	5-6 times/year	7 or more times/year
1	2	3	4	5

3. During your first year of the program how adequate were the planned hospital visits in reinforcing the theoretical learnings of the first year? Adequacy was:

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

4. How often do college instructors actively teach in the hospital portion of the program?

Never	Rarely	Sometimes	Often	Frequently
1	2	3	4	5

5. How often do hospital instructors actively teach in the college portion of the program?

Never	Rarely	Sometimes	Often	Frequently
1	2	3	4	5

6. To what extent were the laboratory procedures as taught during the first year relevant to the practical procedures of year two? The relevancy was:

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

7. How often were classes held at the college during the clinical year for students of the participating hospitals?

Never	1 or 2 times/year	3-4 times/year	5-6 times/year	7 or more times/year
1	2	3	4	5

8. In general, how would you rate the integration of the hospital and college components of the program? Integration was:

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

SECTION III

PROGRAM EFFECTIVENESS INSTRUMENT

Instructions

Your help is requested in evaluating the total TWO YEAR respiratory technology program that you are currently completing. Please respond to each statement as accurately as possible by circling only one alternative per question. Try to give equal weighting to both first and second year except for those questions specifically directed to one of the years.

1. In general, how would you rate the quality of instruction you received during the total program? Quality was:

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

2. In general, how stimulating has the total program been?

Boring	Dull	Fairly Stimulating	Stimulating	Very Stimulating
1	2	3	4	5

3. How adequate was the college portion of the program in providing you with the theoretical knowledge necessary for the practice of respiratory technology? Adequacy was:

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

4. How adequate was the clinical experience in allowing you to develop the skills necessary to practice respiratory technology? Adequacy was:

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

5. Would you recommend the program you are experiencing to a close friend or relative if they were interested in pursuing a career in respiratory technology? Would:

Not Recommend	Recommend with Reservations	Recommend	Highly Recommend	Very Highly Recommend
1	2	3	4	5

6. How relevant were the first year laboratory exercises in developing operational skills for equipment used in respiratory technology? Relevancy was:

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

7. From time to time, job-related problems arise which require trouble shooting skills such as in the case of ventilator failure. How well did the program prepare you to handle such problems? Preparation was:

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

8. How would you describe the variety of clinical experiences providing during the second year?

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

9. In general, how would you rate the clarity of explanation on how clinical procedures are to be carried out? Clarity was:

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

10. In general, how well was first year learning reinforced during the second year? Reinforcement was:

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

11. In general, how would you rate the overall effectiveness of the total two year program? Effectiveness was:

Very Poor	Poor	Fair	Good	Excellent
1	2	3	4	5

THANK YOU FOR YOUR KIND ASSISTANCE
IN PARTICIPATING IN THIS STUDY

If you have any comments you would like to make about the college/hospital relationship, please do so below.

Comments:

APPENDIX C

INTERVIEW GUIDE

INTERVIEW GUIDE

Name:

Affiliation:

Date of Interview:

1. Who is in charge of the overall program?

2. (a) What is the official sanction for the development and continuance of the program? (Does a formal contract or agreement exist between the college and hospital?)

   (b) To what degree were the terms of the contract mutually agreed upon?

3. Is there a formal coordinator of the total program to ensure adequate integration between the segments of the program? If not, how is coordination achevied?

4. (a) Do specific written procedures or committee terms of reference exist that clearly delineate program responsibility and interrelation mechanisms?

   (b) To what degree were the above procedures or terms of reference mutually agreed upon between the hospital and the college?

5. (a) Are coordination procedures or the job description of the formal coordinator clear and explicit?

   (b). To what degree was the job description of the formal coordinator mutually agreed upon?

6. Do you have a specific budget category for expenditures required by the relationship between the college and hospital?

7. Due to participation in the joint cooperative program, how much additional equipment do you purchase for educational purposes required by the program?

8. To what extent do your instructional staff lecture or instruct at the college (or hospital) on a regular or systematic basis?

9. To what extent do the college and hospital share or exchange personnel, equipment, educational aids, etc.?

10. (a) How frequently does the program advisory committee meet?

(b) What is the composition of the committee membership?

(c) To what degree were the terms of reference mutually agreed upon?

11. (a) How frequently does the program liaison committee meet?

(b) What is the composition of the committee membership?

(c) To what degree were the terms of reference mutually agreed upon?

12. (a) Who is responsible for student selection?

(b) Do specific procedures exist for student selection?

(c) To what degree were the procedures mutually agreed upon?

13. How successful have your students been with the CSRT registration examinations?

14. Have there been any major changes in the program over the past three years?

15. What are the problems of the joint cooperative program? (if any)

16. What changes would you make to the existing program if you were given that opportunity?

17. Do you have any additional comments on the college/hospital relationship?

APPENDIX D

DATA ANALYSIS TECHNIQUE FOR
INTERVIEW INFORMATION

APPENDIX D

DATA ANALYSIS TECHNIQUE FOR INTERVIEW INFORMATION

In order to analyze the data gathered by interview the following methodology was used.

Formalization

a) Formal agreements:

Question: *What is the official sanction for the development and continuance of the program? Does any formal agreement or contract exist between the institute and the hospital?*

Responses were coded as follows:

5. Government legislation or ministerial agreement
4. Written contract between organizations
3. Written agreement through the advisory committee
2. Written agreement through the college/faculty committee
1. Informal, tacit relationship between organizations

b) Coordination:

Question: *Is there a formal coordinator of the program to ensure adequate integration between the segments of the program? If not, how is coordination achieved?*

Responses were coded as follows:

Coordination is the responsibility of:

5. A formal coordinator of the total program who has no other responsibilities
4. A named coordinator who has other responsibilities
3. A special coordinating committee
2. The clinical liaison committee
1. No specific person, informal liaison between college/hospital faculty

c) Procedural standardization:

Question: *Do specific written procedures or committee terms of reference exist that clearly delineate program responsibility and interrelation mechanisms?*

Responses were coded as follows:

Program responsibility and interrelation mechanisms were:

5. Very clearly written
4. Clearly written
3. Generally understood
2. Poorly written
1. Very vague, unavailable, or non-existent.

If a formal or named coordinator did exist, then the following question was asked.

Question: *Are coordination procedures or the job description of the formal coordinator clear and explicit?*

Responses were coded as follows:

5. Very clearly written
4. Clearly written
3. Generally understood
2. Poorly written
1. Very vague, unavailable, or non-existent.

Intensity

a) Frequency of interaction:

Question: *How often are scheduled liaison committee meetings held?*

Responses were coded as follows:

5. 7 or more times a year
4. 5-6 times a year
3. 3-4 times a year
2. 1 or 2 times a year
1. Never

Question: *How often are scheduled advisory committee meetings held?*

Responses were coded as follows:

5. 7 or more times a year
4. 5-6 times a year
3. 3-4 times a year
2. 1 or 2 times a year
1. Never

b) Relative resource commitment:

Question: *Do you have a specific budget for expenditures incurred due to your involvement in the joint cooperative program between the college and hospital? Such expenditures could include such items as salaries, travel, meeting expenses, secretarial fees, or other related educational expense. If no budget exists how are these expenses met?*

Responses were coded as follows:

5. Specific budget exists

4. Money is available from general program funds

3. Money is available from departmental sources

2. Money is very difficult to obtain for such purposes

1. No money is available for such expenses

Question: (Hospital clinical coordinators only) *Due to participation in the joint cooperative program, how much additional equipment is purchased for educational purposes?*

Responses were coded as follows:

5. High commitment--deliberately purchases increased number and and variety of equipment for educational purposes

4. Good commitment--deliberately purchases a variety of equipment for educational purposes

3. Moderate commitment--is cognizant of student needs when purchasing equipment and expends some funds for educational purposes

2. Low commitment--limited funds available for educational purposes

1. Do not have any funds available for educational purposes

Question: *To what extent do your instructional staff lecture or instruct on a regular or systematic basis at the institute or college?*

Responses were coded as follows:

5. Frequently

4. Often

3. Sometimes

2. Rarely

1. Never

Reciprocity

a) Resource reciprocity:

Question. *To what extent do the participating institutions (college/hospital) share or exchange personnel, equipment, or educational aids with each other for educational purposes on a regular basis?*

Responses were coded as follows:

5. Frequently
4. Often
3. Sometimes
2. Rarely
1. Never

b) Definitional reciprocity:

Question: *To what degree were the terms of reference for the program advisory committee and liaison committee mutually agreed upon between the participating institutions?*

Responses were coded as follows:

5. Mutual agreement among participating institutions
4. Close agreement among participating institutions
3. Some agreement among participating institutions
2. Little agreement among participating institutions
1. Unilateral decision by one institution

If a formal contract existed then the following question was asked.

Question: *To what extent were the terms of the contract mutually agreed upon?*

Responses were coded as follows:

5. Mutual agreement among participating institutions
4. Close agreement among participating institutions
3. Some agreement among participating institutions
2. Little agreement among participating institutions
1. Unilateral decision by one institution

If a formal coordinator existed with a specific job description the following question was asked.

Question: *To what extent was the job description of the formal coordinator mutually agreed upon?*

Responses were coded as follows:

5. Mutual agreement among participating institutions
4. Close agreement among participating institutions
3. Some agreement among participating institutions
2. Little agreement among participating institutions
1. Unilateral decision by one institution

Question: *To what extent was the job description for the program coordinator mutually agreed upon?*

Responses were coded as follows:

5. Mutual agreement among participating institutions
4. Close agreement among participating institutions
3. Some agreement among participating institutions
2. Little agreement among participating institutions
1. Unilateral decision by one institution

APPENDIX E

LONDON (FANSHAWE COLLEGE)

INTERVIEW RESPONSES

APPENDIX E

LONDON (FANSHAWE COLLEGE)

INTERVIEW RESPONSES

The following is a synoptic version of the interviews conducted with the program coordinator and three hospital department heads involved with the Fanshawe College Respiratory Technology Program. Where all responses were similar only one summary statement is provided. Where different responses were elicited from the interviewees on the same question all responses are included.

Question. *Who is in charge of the overall program?*

Answer(s). All the interviewees agreed that the Fanshawe College Respiratory Technology coordinator is in charge of the overall program. During the course of the interviews it was pointed out that although the coordinator has the responsibility for organizing the clinical experiences he has no actual authority over the hospital personnel and can only suggest changes to the clinical experiences.

Question. *What is the official sanction for the development and continuance of the program? Does any formal agreement or contract exist between the college and hospital?*

Answer(s).

1. The interview with the department head of Respiratory Technology at the University Hospital revealed that it was a relatively new hospital (1973) and has only been associated with the Fanshawe program since 1973.

At the request of the University Hospital, there exists a specific agreement between Fanshawe College and the University Hospital regarding the clinical experience of the respiratory technology students. The agreement outlines its purpose, responsibilities of the parties involved, arrangements and supervision of clinical learning experiences, conditions, regulations, facilities for the students, insurance, liability, health care, and the general understanding of the conditions surrounding the program. The contract is reviewed annually and is signed by four senior respresentatives of the institutions involved.

One clause within the agreement specified that Fanshawe College will reimburse the University Hospital for such educational costs incurred by the clinical training provided for the Fanshawe College students. The hospital submits a statement quarterly which includes the salary of the clinical instructor and costs related to secretarial expenses. In addition the sum of $1,250.00 per annum is paid to the hospital for related educational costs such as textbooks or printing services.

It is apparently the policy of the hospital administration of the University Hospital that all students receiving clinical experience at the hospital must be either covered by an agreement with an affiliated educational institution or have written permission from the Director of Staff Education to be on the premises.

2. There was no written agreement or contract with the other two hospitals involved with the program. One department head stated that his hospital administration had formed a committee to investigate the concept of contractual agreements concerning use of the facility by students however no decision was reached at the time of the interview.

According to the program coordinator, Fanshawe College does pay money to the clinical facilities for the educational experiences received by the students although to his knowledge there was no specific agreement between the institutions on the way in which the money should be spent. As is the case of the University Hospital money is provided to the hospitals for the salary of the clinical instructor and other related educational costs that the hospital may incur. The researcher was unable to ascertain the amount of money paid to the clinical facilities because the two department heads involved stated they were unaware of the amount of money being received from the college and the specific disposition of same.

Question. *To what degree were the terms of the agreement mutually agreed upon?*

Answer(s). In the case of the University Hospital the Director of Staff Education requested the agreement because of the need to provide funding for the costs relating to the clinical experiences received by students. Fanshawe College developed an initial agreement then the parties involves worked on the draft until the agreement was mutually agreeable to both institutions. The question was not relevant to the other clinical facilities as no contract existed.

Question. *Is there a formal coordinator of the total program to ensure adequate integration between the segments of the program? If not, how is coordination achieved?*

Answer(s). A staff member from Fanshawe College is assigned the task of coordinating the clinical experience and he is given necessary release time from his teaching assignment to perform the tasks related to coordination. To assist the coordinator in his tasks a clinical liaison committee exists involving key staff from all institutions involved.

Question. *Do specific written procedures or committee terms of reference exist that clearly delineate program responsibility and inter-relation mechanisms?*

Answer(s). As mentioned above, a clinical liaison committee was established to assist the clinical coordinator with the integration of theoretical and clinical components of the program. The terms of reference for this committee are clear and concise and relate specifically to those activities concerned with program integration. In addition the subject of coordination was included in the agreement between the College and the University Hospital.

Question. *To what degree were the terms of reference for the program advisory committee and the liaison committee mutually agreed upon?*

Answer(s). Apparently no terms of reference exist for the program advisory committee however the terms of reference for the liaison committee were mutually agreed upon at a meeting specifically called for the purpose of developing the terms of reference for the committee.

Question. *Are coordination procedures or the job description of the formal coordinator clear and explicit?*

Answer(s). Fanshawe College has a specific job description for the clinical coordinator and until June, 1977 a specific individual was hired as the clinical coordinator. The incumbent resigned and at the time of the interview applicants for the job were being considered. The job description was clear and explicit and readily available from the program coordinator.

Question. *To what degree was the job description of the formal coordinator mutually agreed upon?*

Answer(s). The original document was drafted by Fanshawe College and then it was submitted to the clinical liaison committee for amendment or modification. All interviewees agreed that the document was mutually agreeable to all concerned.

Question. *Do you have a specific budget for expenditures incurred due to your involvement in the joint cooperative program between the college and hospital? Such expenditures could include such items as salaries, travel, meeting expenses, secretarial fees, or other related educational expense. If no budget exists how are these expenses met?*

Answer(s). As explained earlier the University Hospital has a specific budget for educational related expenses which is funded by Fanshawe College. Fanshawe College also has a special budget for coordination activities including the salary of the clinical coordinator and other related costs pertinent to the joint cooperative nature of the program. The two other department heads interviewed stated they did not have a specific budget for educational related expenses but that money could be obtained from the department global budget. Further it was explained that travel money could be obtained for hospital personnel from a special travel fund available from Fanshawe College.

Question. (Hospital department heads only) *Due to participation in the joint cooperative program how much additional equipment is purchased for educational purposes?*

Answer(s). The hospitals do not purchase any equipment specifically for educational purposes.

Question. *To what extent do your instructional staff lecture or instruct at the college (or hospital) on a regular or systematic basis?*

Answer(s). All the interviewees agreed that there is no exchange of instructional staff between the institutions involved. One department head admitted that in actuality his institution did not have a clinical instructor but that he held the dual position of department head and instructor. The College coordinator also pointed out that the workload of his staff with the exception of the clinical coordinator did not permit the staff member to teach at the hospitals. Further, since the students return to the College for one month at the end of the second year this exchange of staff was not really necessary.

Question. *To what extent do the participating institutions (college/hospital) share or exchange personnel, equipment or educational aids with each other for educational purposes on a regular basis?*

Answer(s). On occasion the College has supplied equipment to the hospitals and the hospitals have made certain audio-visual aids available to the College. All interviewees agreed that the relationship between the participants was generally good and if equipment was required by one institution the others would attempt to make the equipment available. However the exchange does not occur on a regular basis.

APPENDIX F

OTTAWA (ALGONQUIN COLLEGE)
INTERVIEW RESPONSES

APPENDIX F

OTTAWA (ALONGQUIN COLLEGE)

INTERVIEW RESPONSES

The following is a synopsis of the data gathered by interview with the Algonquin College program coordinator and two hospital department heads involved with the Ottawa (Algonquin College) Respiratory Technology Program. Whenever the information received from the interviewees was similar only one summary statement is provided. Where different responses were elicited from the respondents all responses are included.

Question. *Who is in charge of the overall program?*

Answer(s). All the interviewees agreed that the Algonquin College respiratory technology program coordinator is responsible for the overall program.

Question. *What is the official sanction for the development and continuance of the program? Does any formal agreement or contract exist between the college and hospital?*

Answer(s). There is a specific written agreement between Algonquin College and the major affiliated hospitals. The document is a general contract specifying the purpose of the contract, responsibilities of the parties involved, the funding arrangements for clinical instructors, insurance coverage, student liability and a specific outline of the clinical experiences to be received by the students. The contract is reviewed annually and is signed by senior officials of the College and the affiliated hospitals. A major stipulation within the contract is that Algonquin College will reimburse the participating institutions for such educational costs incurred by the clinical training provided for the Algonquin College students. In the 1975-76 academic year the clinical facilities received a total of $2,425.00 per student.

Question. *To what degree were the terms of the agreement mutually agreed upon?*

Answer(s). The original draft of the contract was prepared by the college administration and then submitted to the hospitals for comment and modification. Both parties then met and worked on the draft until the agreement was mutually acceptable to the institutions involved.

Question. *Is there a formal coordinator of the total program to ensure adequate integration between the segments of the program? If not, how is coordination achieved?*

Answer(s). The college program coordinator is charged with the responsibility of coordinating all phases of the respiratory technology program.

Question. *Do specific written procedures or committee terms of reference exist that clearly delineate program responsibility and interrelation mechanisms?*

Answer(s). The Ottawa program is very well documented and detailed written information is available on all phases of the program. A comprehensive dossier was given to the researcher with copies of advisory committee terms of reference, college/hospital liaison activities, liaison committee description, a role description of the coordinator, student clinical evaluation forms, clinical instructor appointment guidelines, plus numerous other documents related to college/hospital liaison activities.

__Question__. *To what degree were the terms of reference for the program advisory committee and the liaison committee mutually agreed upon?*

__Answer(s)__. The terms of reference for both committees were college originated without specific consultation with hospital personnel.

__Question__. *Are coordination procedures or the job description of the formal coordinator clear and explicit?*

__Answer(s)__. As mentioned above Algonquin College has a detailed job description for the program coordinator which included specific functions related to clinical facility liaison. The job description and related documentation is very clear and explicit.

__Question__. *To what degree was the job description of the formal coordinator mutually agreed upon?*

__Answer(s)__. The job description was prepared by the college since the coordinator is an employee of Algonquin College. Any issues which could affect the ability of the individual to function in his capacity as coordinator while in another institution are written into the formal agreement between the institutions involved.

__Question__. *Do you have a specific budget for expenditures incurred due to your involvement in the joint cooperative program between the college and hospital? Such expenditures could include such items as salaries, travel, meeting expenses, secretarial fees, or other related* *educational expense. If no budget exists how are these expenses met?*

Answer(s). As explained earlier the college provides all monies for any education related expense incurred by the hospital. The precise details are included in the written agreement. Each hospital keeps a record of educational expenses and submits a statement to the college every three months.

Question. (Hospital department heads only). *Due to participation in the joint cooperative program how much additional equipment is purchased for educational purposes?*

Answer(s). Both hospital department heads stated that since the funding is provided by the college the hospital expends very little if any additional money for equipment or related educational items. Both interviewees admitted that the funding arrangement with the college was only a recent innovation and precise procedures for equipment purchase where unclear at this point in time. However both agreed that the investment on behalf of the hospital was minimal.

Question. *To what extent do your instructional staff lecture or instruct at the college (or hospital) on a regular or systematic basis?*

Answer(s). All the interviewees agreed that there was little or no exchange of instructional staff between the institutions involved. An exchange program for instructors is anticipated for the 1977-78 academic year.

Question. *To what extent do the participating institutions (college/hospital) share or exchange personnel, equipment or educational aids with each other for educational purposes on a regular basis?*

Answer(s). Although exchange does not occur among the program constituents on a regular basis casual sharing does occur. The college will loan equipment to the hospitals if required while the hospitals will notify and invite the college staff to any interesting lecture that the hospital has organized. All the interviewees agreed that the relationship among the institutions was good and if a specific need occurred resources were readily made available from the other institutions.

APPENDIX G

CALGARY (SAIT) INTERVIEW RESPONSES

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CALGARY (SAIT) INTERVIEW RESPONSES

This Appendix presents a synopsis of the data gathered during interviews conducted with the SAIT program head and the department heads of the affiliated hospitals that collectively form the Calgary School of Respiratory Technology. Whenever the responses from the interviewees coincided or were in agreement only one summary statement is provided. If different responses occurred on a given item then all responses are included.

Question. *Who is in charge of the overall program?*

Answer(s). Three interviewees stated the advisory committee was in charge of the overall program with considerable assistance provided from the working committee (liaison committee). One respondent did not think that there is any one person who takes responsibility for the total program and that SAIT is in charge of the first year while the hospitals assume responsibility for the clinical year.

Question. *What is the official sanction for the development and continuance of the program? Does any formal agreement or contract exist between the college and the hospital?*

Answer(s). All interviewees agreed that to their knowledge no contract or agreement exists between SAIT and the affiliated hospitals.

Question. *To what degree were the terms of the agreement mutually agreed upon?*

Answer(s). Since no contract or memorandum of agreement could be identified this question was irrelevant for this joint cooperative program.

Question. *Is there a formal coordinator of the total program to ensure adequate integration between the segments of the program? If not how is coordination achieved?*

Answer(s). There is no individual person so named as the program coordinator. The program head at SAIT is the chairman of the liaison committee which is the major coordinating body of the Calgary Respiratory Technology program. It was pointed out by the interviewees that the program head is not formally appointed as a coordinator but does assume some responsibility for program coordination in his role as committee chairman. One interviewee stated that the coordination is fragmented because of the lack of clear direction or responsibility. One respondent suggested the chairman of the advisory committee should be named as the program coordinator.

Question. *Do specific written procedures or committee terms of reference exist that clearly delineate program responsibility and interrelationship mechanisms?*

Answer(s). Three interviewees responded no to this question. The SAIT program head explained that the terms of reference of the working (liaison) committee were being revised and will specifically cover the issues of coordination and integration responsibilities. When further questioned on this matter the program head stated that at this particular time the terms of reference of the working committee were vague and as such the committee had virtually no authority to act without recourse to the advisory committee. The terms of reference for the advisory committee are very general and were originated by SAIT. No specific mention is made in the terms of reference on coordination or specific program responsibility. It was indicated that these terms of reference were being revised and would be much more specific to the needs of the joint cooperative program however no draft was available to the researcher at the time of the onsite visitation.

Question. *To what degree were the terms of reference for the program advisory committee and liaison committee mutually agreed upon?*

Answer(s). The terms of reference for the working committee were mutually determined by the members of that committee. However the interviewees agreed that the document was then modified and approved by the advisory committee and some changes occurred over which they had little control or input. The advisory committee terms of reference were developed by SAIT in accord with the "Suggested Guideline for the Operation of the Advisory Committee" as produced by the Minister of Advanced Education and Manpower. There was no discussion or input from the members of the advisory committee. As in the case of the working committee the terms of reference for the advisory committee are being redrafted by the advisory committee so they are more sensitive to the needs of the program.

Question. *Are coordination procedures or the job description of the formal coordinator clear and explicit?*

Answer(s). This question was not relevant to the Calgary program as no coordination procedures could be identified and no formal coordinator existed.

Question. *To what degree was the job description of the formal coordinator mutually agreed upon?*

Answer(s). As alluded to above this question was not applicable to this program.

Question. *Do you have a specific budget for expenditures incurred due to your involvement in the joint cooperative program between the college and hospital? Such expenditures could include such items as salaries, secretarial fees, or other related educational expense. If no budget exists how are these expenses met?*

Answer(s): Two interviewees stated that they have no specific education budget however the salaries for the instructor and the students are included in the departmental salary budget. Money is available for other related educational expenses from the operating budget of the department. One interviewee explained he did have a specific budget for expenditures related to the second year students. This budget is not all encompassing in that it is primarily concerned with student stipends and other related expenses. Should money be required for meetings to do with the joint cooperative program it is available from the departmental budget. The institute program head stated that SAIT does not have a specific budget for coordination activities but funds can be obtained from the section's supply budget.

Question. (Hospital department heads only) *Due to participation in the joint cooperative program how much additional equipment is purchased for educational purposes?*

Answer(s). All three hospital department heads agreed that very little equipment is purchased for educational purposes. It was pointed out that the hospitals are very well equipped and additional equipment is really not required. One hospital purchases textbooks for student and departmental use. All three institutions have a centralized audio-visual department hence no specific expenditures are made in this area.

Question. *To what extent do your instructional staff lecture or instruct at the college (or hospital) on a regular or systematic basis?*

Answer(s). All interviewees agreed that no exchange of instructional staff occurs between the institutions involved.

Question. *To what extent do the participating institutions (college/hospital) share or exchange personnel, equipment or educational aids with each other for educational purposes on a regular basis?*

Answer(s). Two interviewees stated that exchange only occurs sometimes or very seldom but the cooperation is good if a specific need arises. The other two respondents felt the exchange was more frequent and included audio-visual aids and equipment. When queried on the direction of the interchange both agreed the arrangements were reciprocal. All interviewees stated no exchange occurs on a regular or planned basis but purely in response to an identified need at a given point in time.

APPENDIX H

EDMONTON (NAIT) INTERVIEW RESPONSES

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EDMONTON (NAIT) INTERVIEW RESPONSES

The following is a synopsis of the information gathered by interview with the program head of NAIT and the three hospital department heads involved with the Edmonton Respiratory Technology Program. Where all the responses were in agreement only one summary statement is provided. Where different responses were elicited from the interviewees on the same question all responses are included.

Question. *Who is in charge of the overall program?*

Answer(s). This question resulted in a number of different responses and so each interviewee's answer is included.

1. No one person is officially in charge of the program. It would appear that the advisory committee plays a role as far as the ultimate responsibility is concerned however the day to day operation of the program is achieved through the working committee.

2. The overall responsibility lies with NAIT although the Institute is primarily responsible for the first year of the program whereas the hospitals assume the responsibility for the clinical experiences received by the student.

3. The program director at NAIT is in charge of the program.

4. No single individual or institution is in charge of the program; responsibility is shared by the representatives of the participating institutions. Consensus of the institutions involved is needed prior

to decisions being made that could affect specific institutions. It is the responsibility of the Respiratory Technology department heads to convey any major program changes to their senior administration for necessary approval prior to action being taken.

Question. *What is the official sanction for the development and continuance of the program? Does any formal agreement or contract exist between the college and the hospital?*

Answer(s). The official sanction for the continuance of the program is by the CMA/CSRT conjoint committee on accreditation of training programs. The local sanction is through the program advisory committee. As far as the interviewees knew no formal agreement or contract exists between the hospitals and the Institute. An agreement was established at an Ad Hoc committee meeting in 1966 and the informal agreement was included in the minutes of that meeting. All the interviewees agreed that the relationship was developed through relatively informal mechanisms and has continued in that manner since the inception of the joint program.

Question. *To what degree were the terms of the agreement mutually agreed upon?*

Answer(s). Since no contract or memorandum of agreement existed in this particular program this question was redundant.

Question. *Is there a formal coordinator of the total program to ensure adequate integration between the segments of the program? If not, how is coordination achieved?*

Answer(s). There is no formal coordinator of the program. Coordination is achieved through the working committee and communication between the hospital instructors and the Institute program head. It was suggested by two of the interviewees that the responsibility of coordination rests with the Institute program head however when questioned on this the program head stated he had no authority over the hospital portion of the program. In addition he stated that the responsibility of clinical coordination was not officially recognized by the Institute administration as part of his daily activities.

It was pointed out that the advisory committee plays a role in coordination because of the presence of senior representatives of the participating hospitals on that committee. Also according to the terms of reference the liaison committee is directly responsible to the program advisory committee.

Question. *Do specific written procedures or committee terms of reference exist that clearly delineate program responsibility and interrelation mechanisms?*

Answer(s). This area is very vague and tends to be informal. Although terms of reference do exist for the liaison committee they do not specifically delineate program responsibility and interrelationship mechanisms. The terms of reference for the college/hospital liaison committee state that "the committee shall enhance training procedures by promoting close communication among training schools . . . ." but no procedures or specific communication channels are outlined.

Question. *To what degree were the terms of reference for the program advisory committee and the liaison committee mutually agreed upon?*

Answer(s). The terms of reference for the program advisory committee are very general and emanate from a document from the Minister of Advanced Education and Manpower called a "Suggested Guideline for the Operation of the Advisory Committee." There was no discussion or input by the advisory committee members on the terms of reference for the Respiratory Technology Program. However since the terms of reference are vague considerable latitude appears to exist in their interpretation.

The liaison committee terms of reference were mutually agreed upon by all program constituents at a meeting specifically called for the purpose of developing the committee terms of reference.

Question. *Are coordination procedures or the job description of the formal coordinator clear and explicit?*

Answer(s). This question did not apply to the Edmonton program since there is no program coordinator.

Question. *To what degree was the job description of the formal coordinator mutually agreed upon?*

Answer(s). As explained above this question was not applicable to this program.

Question. *Do you have a specific budget for expenditures incurred due to your involvement in the joint cooperative program between the college and hospital? Such expenditures could include such items as salaries, travel, meeting expenses, secretarial fees, or other related educational expense. If no budget exists how are these expenses met?*

Answer(s). The answers to this question varied hence each response is included.

1. No specific budget has been identified for expenditures required by the institute/hospital relationship. The student stipends are part of the departmental salary budget and other related expenses are covered from a variety of sources depending on the specific need.

2. A small budget of $50 per annum is provided for educational supplies. Student salaries are part of the departmental budget.

3. Education costs for second year students are specifically budgeted for in the departmental education budget. This budget is separate and readily identifiable.

4. The Institute does not have a specific budget for coordination activities but funds can be made available from the section supply budget. Expenses such as secretarial fees are non existent as the department secretaries do all related work as it pertains to the college/hospital relationship.

Question. (Hospital department heads only) *Due to participation in the joint cooperative program how much additional equipment is purchased for educational purposes?*

Answer(s). The hospital department heads agreed that some money is available for equipment that is required for educational purposes. Such equipment would be requisitioned with the regular capital equipment submission providing the need can be clearly demonstrated.

Question. *To what extent do your instructional staff lecture or instruct at the college (or hospital) on a regular or systematic basis?*

Answer(s). All interviewees agreed that there is little or no exchange of instructional staff between the institutions involved on a formal basis. Some hospital staff do teach at the Institute if requested but this does not occur on a regular or systematic basis. Similarly the institute staff do not teach at the hospitals due to the heavy demands of the teaching program at NAIT.

Question. *To what extent do the participating institutions (college/hospital) share or exchange personnel, equipment or educational aids with each other for educational purposes on a regular basis?*

Answer(s). There is no exchange that occurs on a regular planned basis however all interviewees agreed that should a specific need arise cooperation among the program constituents is excellent.